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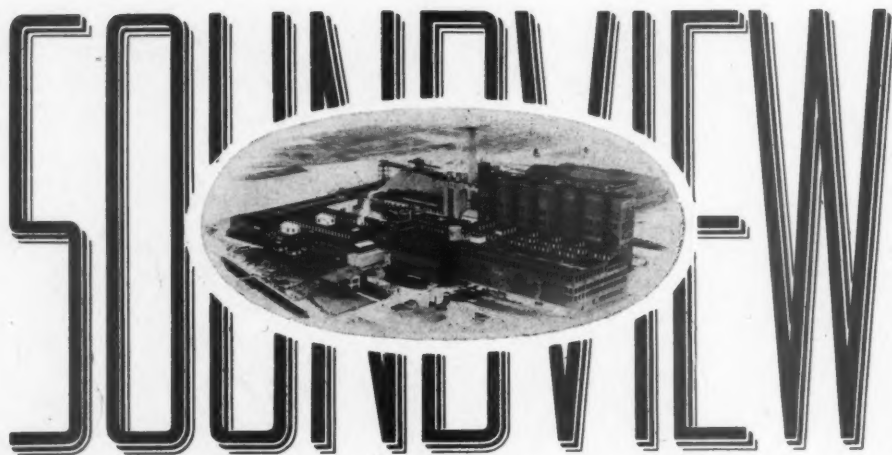
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SOUNDVIEW PULP COMPANY
EVERETT · WASHINGTON





*The Management Journal
Covering North America's
Wood Pulp, Paper and
Cellulose Industries*

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Editorials

THE WASHINGTON "FRANKENSTEIN"

ONE of the things brought home forcibly to a representative of Pacific PULP & PAPER INDUSTRY in Washington, D. C., is how complicated government has become.

The situation is almost beyond human comprehension and it seems impossible that any individual or even small group of individuals could run such a business efficiently.

The national government is overwhelmed with decrees and directives supplanting laws of democratic origin in many cases. Powers of agencies have accumulated beyond the ken of the people in our hinterlands. Even many well informed men in the management of pulp and paper industry are not aware of the scale upon which these things have developed.

Your newspaper is incapable of telling the story because it simply is beyond human power. A Washington newspaper-columnist told us that he and his colleagues find it is hopeless to try to catch up with everything that goes on. Even if he tried to tell some stories he runs across he would find himself in dangerous legal tangles. Acts of Congress and of the basic departments of government are continually being contorted or circumvented by agencies. True democracy may be a luxury that has to be dealt with in this manner during wartime. But the danger is that it becomes a habit.

Meanwhile, there is no denying the fact that the pulp and paper industry is desperately in need of good men who are willing to go to Washington and serve in this Babel of government. The industry has to live with it—or it doesn't survive. There are good pulp and paper men there now, who for reasons of health, or for personal economic reasons, should be given a rest and allowed to go home or back to their own private jobs.

AFTER NOVEMBER? AFTER THE WAR?

AND what about after the November election? And after the war? A great many industry leaders and political leaders today are loudly praising the virtues of free enterprise. And yet, in the next breath, some of these same men are asking for a continuation of government controls after the war. We hear complaints about price ceilings now, but two industries—lumber and coal—through their chosen representatives, have already asked for postwar price "floors."

Clark Everest, head of Marathon Corp., says: "Postwar continuance of some form of price control—until inventories have been returned to somewhere near a normal basis—will be necessary for some time to come." He's far from being alone in making this observation.

George H. Mead, who was twice president of the American Paper and Pulp Assn., and who heads Mead Corp., predicts that in the postwar era there will be "more urgent and greater need of talent from the pulp and paper industry in Washington than there is today."

Obviously, there are problems facing us as soon as this war is over that will be just as full of dynamite as any we faced in wartime.

A NEW VOCATION

MOST pulp and paper industries are finding it important to know their way around Washington. Some of them are sending their smartest men there to find out what new legislation or decrees may be expected, or what effects present legislation and decrees will have on their particular business.

A new vocation—a new type of engineering consultant—has been created by Washington developments. We have met some of these smart operators who set themselves up to serve industries in Washington on a fee basis and some of them do a good job.

One paper industry executive wrote us recently stating that he "found a lot of helpful information" in the article published in the May, 1944, issue of Pacific PULP & PAPER INDUSTRY entitled: "Washington—An Inside View." It is our plan to continue publishing such articles as will be helpful to management; written first hand in the national capital by our own editors.

MORE TIPS ON WASHINGTON

A GOOD piece of advice to the average industry executive or representative who has to go to Washington—no matter how much he dislikes the chore—is to make hotel reservations at least three weeks in advance and to get them confirmed.

Also, if he wants to be among pulp and paper mill men who talk his language, he would most likely choose the Raleigh or Washington hotels, or, sometimes, the Hay-Adams or Statler. The rates are high, probably much higher than in your home town.

It is necessary to take taxis to get around the sprawling city but these operate on zone rates and are cheap—most offices being in the first (30 cent) zone or the second (50 cent) zone. Rides must be shared with anyone going the same way.

In government buildings are crowded cafeterias for eating places. The Army's fabulous Pentagon—world's largest office building—feeds thousands of persons in ten different lunch bars. In many of the government

cafeterias, colored "mammies" are the cooks and this is a bit hard, sometimes, on delicate northern tummies, unaccustomed to southern style cooking, admittedly good for those "as likes it."

The city is over-crowded—mostly with young stenographers and girl clerks. There are half a dozen different categories of police—White House, Capitol, etc.—and the saying is if a murder were committed in daylight on a main street, six cops probably would walk by without doing anything until a seventh, who had authority, arrived on the scene.

We have previously stated that many of the best men in the pulp and paper industry are now in Washington. It is also true that in many lesser jobs in Washington are men drawing salaries better than they could earn in civil life. The dollar-a-year men, with their ten-dollar-a-day allowance, are, of course, very much underpaid. But many officials are drawing up to \$6,000 a year, who could not draw down such pay in private business.

A WORTHWHILE CONTEST

IT is with no hesitation whatever that we recommend a contest which is thrown open to all superintendents and foremen of North American pulp and paper mills by John W. Bolton & Sons, Inc., the Lawrence, Mass., manufacturers of papermaking machinery.

They are offering \$5,000 in U. S. war bonds for the best articles suggesting:

1. How to promote better relations between employees and their immediate foremen,
2. The part a superintendent should play in developing cooperative employer-employee relations, or
3. How a superintendent can encourage his men to turn in ideas and suggestions.

Of course, the superintendent or foreman who takes advantage of this contest has to be able to write fairly intelligibly. However, we are assured that the practicality—"the meat"—in the articles will count in the contest, rather than literary style.

There are three continent-wide prizes of \$500, \$300

and \$200 in bonds. There will also be sixty divisional prizes of \$25 to \$200, so the field's wide open for you men who might have some ideas on the above subjects which you feel in the mood to pass along.

As we stated above, this seems to be a most worthwhile contest and we do not hesitate to recommend it because the Bolton Co. is most meticulous in the handling of the awards. That company desires that the contest be entirely above reproach.

It is not endeavoring to commercialize the contest but to render real service to the industry. Ten divisional first prize papers will be published in book form for free distribution.

All papers must be mailed before January 1 to George K. Craigie, secretary-treasurer of the American Pulp & Paper Mill Supts. Assn., 220 East 42nd, New York 17. But you don't have to be an association member to compete. Judges—practical mill men—will be selected by chairmen of the association's ten divisions but they will not be association members.

OUR COVER PICTURE

NEARLY everything the military forces of the United Nations drop from the air by parachute—personnel, cargoes and some types of bombs—are carried to the earth by 'chutes made from products of wood pulp.

Personnel, fragmentation bombs and heavy cargoes are carried by the stronger 'chutes made of rayon or nylon. Most people don't know it—but silk parachutes are a relic of the past. Of course, the rayon chutes are made principally from a rayon manufactured from high grade dissolving wood pulp.

For cargoes up to 25 pounds, there is the emergency supply paper crepe parachute, made by the Dennison Manufacturing Co. of Framington, Mass., 100-year-old paper converting firm whose stickers, tags and decorative paper products are well known all over the world. This is shown in our cover picture this month.

The important thing about this newly developed chute is that it promises to be an important postwar product, too.

With the expected great increase in use of airplanes after the war, these paper 'chutes will be produced in large volume by Dennison. Their use will be in dropping mail, light freight and express. It will also be of value in disasters, floods, forest fires, airplane crashes, dropping supplies to isolated parties.

Cost of single 'chutes, \$2.75; of six, \$2.50—packed in fiber cases.

The Dennison 'chute opens in from 1 to 3 seconds after release and is designed for minimum drift, permitting accurate descent from low altitudes.

It is made from "para-crepe," a stock sufficiently strong and resilient to withstand the impact of opening when dropped at normal civilian plane speed. It is of rugged and workmanlike construction, especially designed and tested for the safe landing of such emergency supplies as food, water, medicines, blankets, clothing, fire fighting equipment, and tools.

The 'chute is designed to carry 25 pounds, and under favorable conditions it has been tested successfully up to 50 lbs.

TWO NEW HYDRAULIC LOG BARKERS Will Save Much Wood at Rayonier Mills

HYDRAULIC log barking—most important conservation development in the western forest industries in many years—reached another milestone on August 14 when a new lathe-type hydraulic barker for big logs went into operation at the Port Angeles (Wash.) Division of Rayonier Incorporated.

Simultaneously, an identical machine was being installed at the Grays Harbor (Wash.) Division of the same company and was expected to go into operation almost any day as this issue went to press.

Because of spectacular achievements in wood savings made possible by hydraulic log barking, nearly every mill in the Far Western big timber regions intends eventually to install one type of machine or another for this purpose. Therefore, the installations at the two Olympic Peninsula mills eventually will rank among the pioneers in this important research and development work.

Officials of Rayonier Incorporated estimate that these installations will enable savings of from seven to eight million feet of logs per year at each mill—a total of some 15 million feet (or close to 30,000 cords). They replace mechanical barking equipment which unavoidably took off wood along with bark when applied to the big western logs. Also much of the former loss of wood in saw kerf is eliminated as the breakdown of logs before barking is not necessary with the new machines.

Research and Development

● The type of barker installed at the Rayonier mills was developed by Harry E. Bukowsky, plant engineer for National Paper Products Co., Port Townsend, Wash.

The first installation at Port Townsend went into operation last January 13, culminating five years of experimentation.

J. G. E. "Jack" Ellis, resident engineer of the Shelton (Wash.) Division of Rayonier Incorporated made a number of changes in the similar machines for his company.

He directed engineering and fabrication of the new machines. Both were made in the machine shop of



J. G. E. (JACK) ELLIS, Plant Engineer, Shelton, Wash., Division, Rayonier Incorporated, who directed engineering and fabrication of the new barkers at the Rayonier plants in Port Angeles and Hoquiam, Wash.

the Shelton mill where a staff averaging about 18 members have been continuously employed despite the shutdown of the Shelton pulp mill a year ago.

Mr. Ellis started the engineering work on the Rayonier barkers in November, 1943, even before the Port Townsend machine was completed, and fabrication began last

April. The main barker parts were shipped to Port Angeles by scow on May 26 and by rail to Grays Harbor on June 17. The last piece of equipment, destined for Grays Harbor, left Shelton in late August. Of course, there was also considerable preparatory work and construction necessary at the Grays Harbor and Port Angeles mills, too.

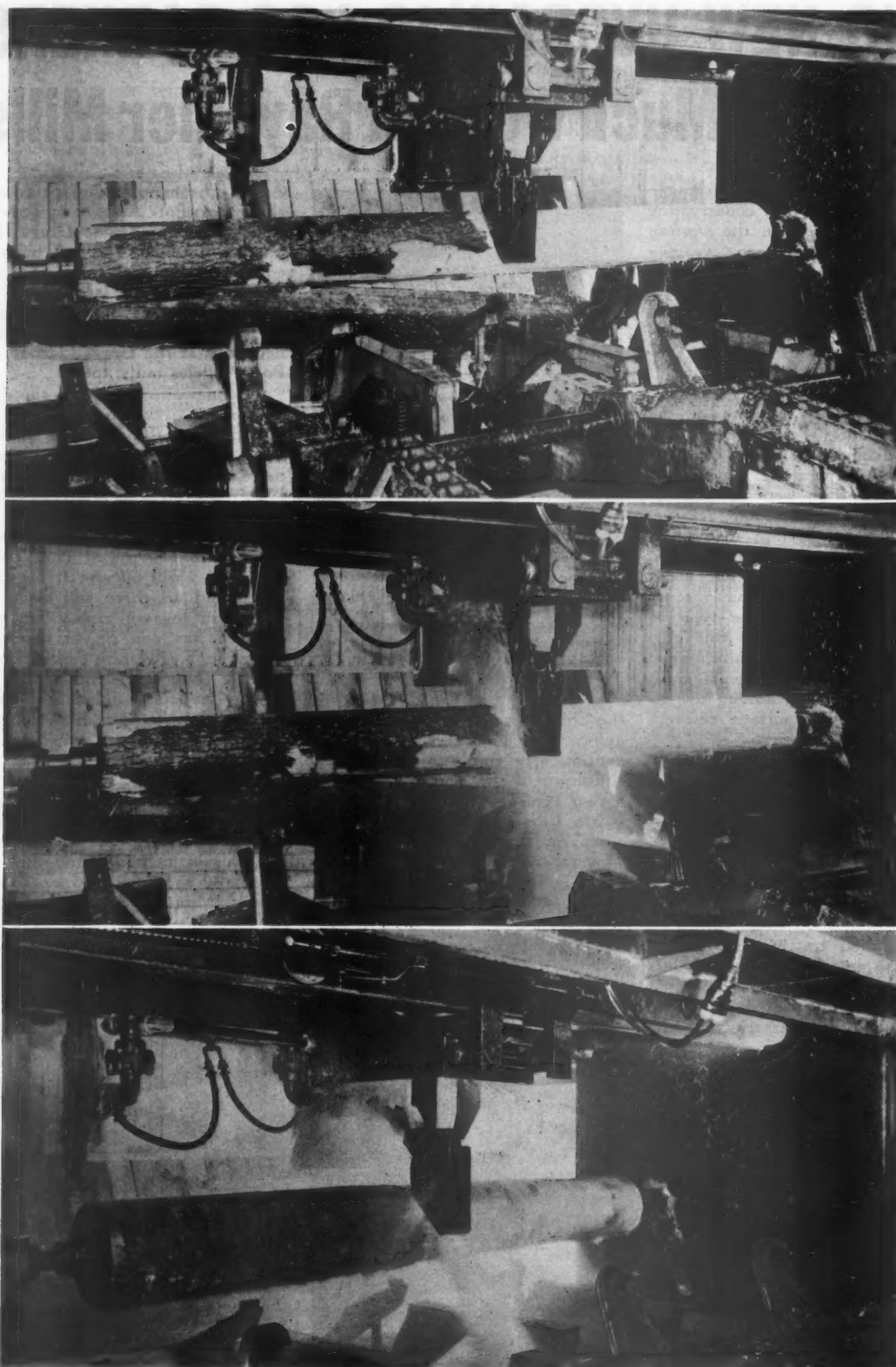
To one who has seen the Port Townsend barker, the first thing observed about the Rayonier installations is that they use considerably more water and higher pressures. Water pressure through the nozzle at the Rayonier mills is 1,100 pounds per square inch, as compared with 650 psi. at Port Townsend. They will operate at the same speed and all three will clean 22-foot long logs of almost any diameter. They run up to about 50 inches in big western hemlock and average about 20 inches.

The Rayonier mills make sulphite pulp and therefore higher water pressure and some other minor changes were considered as essential.

It is expected that the Rayonier machines will soon reach a speed of handling 100 logs per hour (about 22,500 feet an hour) and they are gradually to be worked up to this speed. Minor changes are being



WILLIAM E. BREITENBACH (left) and W. S. LUCEY, Resident Managers, respectively, of the Port Angeles and Grays Harbor Divisions of Rayonier Incorporated where hydraulic log barking equipment has been installed.



NEW HYDRAULIC WHOLE LOG BARKER at Port Angeles, Wash., Division, Rayonier Incorporated. Top view: Machine idle, with nozzle against log. Middle view: Nozzle operating but nozzle carriage and log are idle. Lower view: Machine in operation with log revolving and nozzle moving to left across the log.

made all the time, as found desirable by operation, some even having been made since the Port Angeles machine started up.

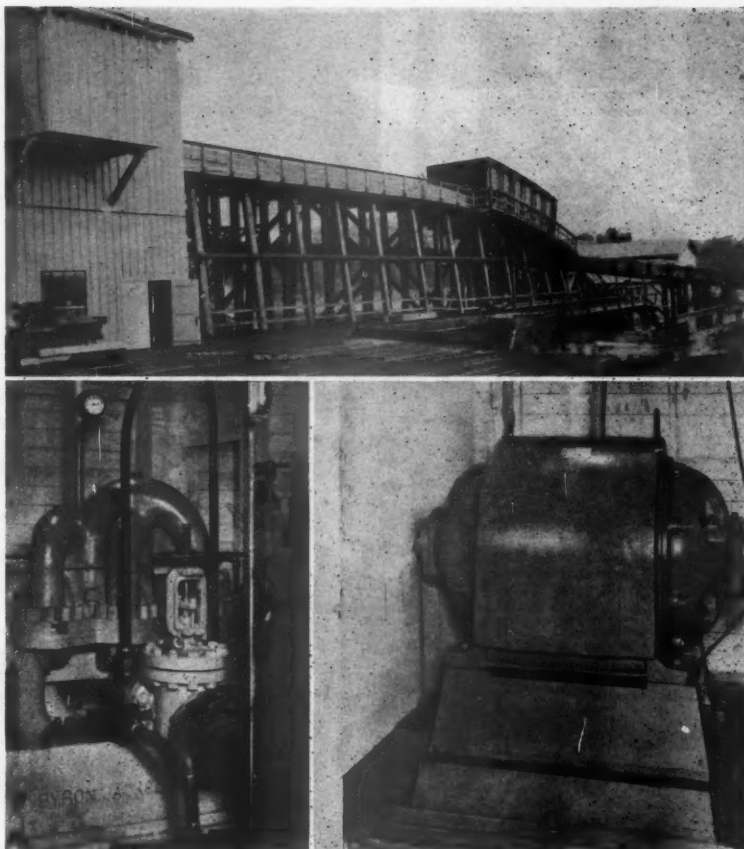
The Port Townsend barker was built at a time when War Production Board restrictions on new materials were very strict and Vice President Albert Bankus of that company called it "the ultimate in improvising." (Complete details with photographs of the Port Townsend installation were first published in *Pacific PULP & PAPER INDUSTRY*, February 1944 issue.) With WPB regulations relaxed, the Rayonier mills were able to use many new materials and parts but they also did some improvising in order to get their machines in operation in wartime, when the possible wood savings are of great importance to the war effort.

Description of Operation and Equipment

● The operation of the Rayonier barkers is simple.

While en route from log pond to mill the logs are thoroughly washed mechanically. The installations required some extension of previous log hauls. At the top of the log haul, a 96-inch circular saw cuts the logs into lengths up to 22 feet. The logs are then carried across a deck to a loader by means of an endless chain. Then, one at a time, the logs are lifted into position in the barker in much the same manner as a piece of wood is placed in a lathe in a woodworking shop.

The lifting of the big logs is done by powerful steel loading arms which might be described as operating like ice tongs, upside down. They lift logs of ten to twelve tons weight as though they were mere branches. When the log is brought to centering height, a tail stock at one end, operated hydraulically, is



UPPER VIEW: The log haul leading into the new hydraulic barking addition to the wood room at the Rayonier mill in Port Angeles, Wash.

Lower left: The six stage centrifugal pump for the barker. It supplies 500 gallons per minute.

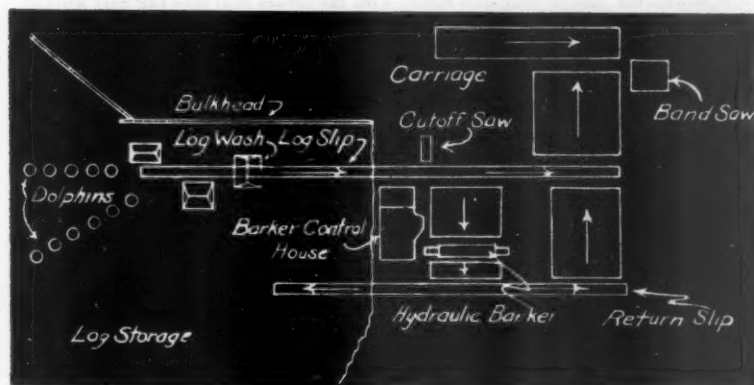
Lower right: The Westinghouse 450 h.p., 3550 r.p.m. motor which drives the pump.

brought up against one end of the log. It pushes the log against a driving head. The log is now suspended between two rotatable spindles and the big lifting arms descend to a position where they are ready to pick up the next log.

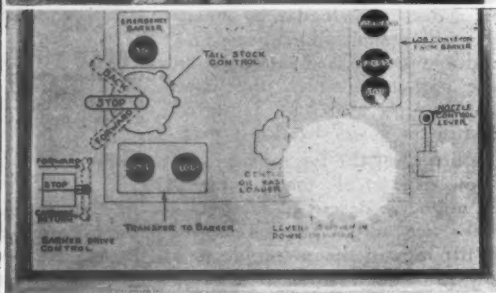
The loading arms are a simple but ingenious device. They stop automatically when a log of any diameter reaches centering height.

The nozzle, suspended from an overhead carriage, is then lowered into position against the log. Here, too, an engineering objective is achieved with complete simplicity. No matter what diameter of log is in the machine, the nozzle maintains a constant distance and angle of impingement from the log, because of the point of suspension and the steel shoe which rests against the log, holding the nozzle in proper position automatically.

The carriage for the nozzle, being synchronized with the drive motor, travels parallel along the length of the log. The carriage is fitted with swing joints. As the log rotates, the jet of water, hitting the log at an angle, strips it of bark, cutting about a seven-inch swath of bark off with each revolution. Water pressure through the nozzle is 1,100



FLOW SHEET OF BARKER INSTALLED AT RAYONIER INCORPORATED, PORT ANGELES, WASH.



THREE PICTURES TAKEN IN THE BARKER CONTROL ROOM, at the Port Angeles Rayonier mill. The fourth picture (lower left) shows some barked logs.

Upper left shows the operator in his small, cedar-paneled, air conditioned room, with the levers that toss big logs around as though they were match-sticks.

To the right is the same room with the operator's oak swivel chair empty. Through the thick, unbreakable glass window, which protects him from flying bark and the powerful spray, of water, can be seen the tail stock, which holds the log as though it were in a lathe against a driving head.

Below this picture, in lower right corner, is a photograph of a framed drawing of the controls which hangs on a wall in the control room. As can be seen in this drawing, there are half a dozen levers on the table. There also are two foot levers.

On the table, in the top left hand corner, is the emergency barker stop. Below that is a handle to control the tail stock. In the lower left hand corner are buttons to control the log transfer to the barker. At upper right are emergency buttons for conveying logs from the barker (normally another operator does this). Off the table, to the left, are the barker drive controls, and off the table to the right, is the nozzle control lever. A light flash, it will be noticed, mars this picture.

pounds psi., with water flowing at the rate of 500 gallons per minute.

After a log is barked, the loader arms are again brought up, the tail stock releases the log, and the log is lowered and passed on, either for transfer to chippers or back to the

storage pond. During the barking operation the next log is brought up in position for the loading arms.

The small, excellently equipped control room is at one side of the barking machine, where the operator has a view of the complete op-

eration. The operator sits in an oak swivel chair in a cedar-paneled, air-conditioned room with levers and buttons before him. He is protected from the powerful spray of water and flying bark by shatter-proof windows.

He operates a few levers and buttons that toss the logs around like match-sticks, a much simpler operation than it may seem at first observation. Only one button is necessary to bring the log to the barker. There is an emergency button to stop the barker. Then there is a simple set-up for operating the barker itself and other buttons control the conveyor that takes the log away, but normally this is another operator's function.

In the barking plant, one man is employed at the top of the log haul as a deck scaler. There may be an occasional log because of poor condition or freakish shape that may not be sent to the barker, but goes direct to headrig.

The barkerman or operator, already described in his position in the control room — takes the logs from the deck scaler.

The barker transfer man then handles the conveyors away from the barker.

The Grays Harbor and Port Angeles divisions handle the logs after the barking in the same manner as heretofore. The logs go to a breakdown and then to chippers.

At Port Angeles a six-knife, 110-inch chipper is replacing a former four-knife set-up, the disc only being changed. The other two chippers in this mill — the 72-inch and the 66-inch machines — remain the same.

Water for the barker is supplied by a centrifugal pump driven by a 450 hp. motor turning at 3,550 revolutions per minute. The log-turning device and nozzle feed are driven by a 30 hp. motor and a five hp. carriage return motor, with a 30 kw. generator set and control panel to furnish the power and control for the unit. These units, together with the control equipment for the log transfer and the 450 hp. pump motor are housed in a switchboard room close to the barker itself.

The barking machine was observed by a representative of Pacific PULP & PAPER INDUSTRY to clean out thoroughly around the short stubs of branches on logs and also around any big knots. It seems to clean a rough, irregular log just as efficiently as a smooth one.

Men Behind the Machines

● The plans for and development of these barkers have been of prime interest to Edward Bartsch, president of Rayonier Incorporated, and began very soon after he took over active direction of the company last fall. They go far toward carry-

ing to fruition the forestry conservation objectives set forth by the president.

Morton B. Houston, vice president and Washington representative of the company; William E. Breitenbach, resident manager at Port Angeles; W. S. Lucey, resident manager at Grays Harbor, and Lyall Tracy, assistant manager at Grays Harbor who was in charge there during a period while Mr. Lucey was in Seattle, were all concerned with the planning and direction of the installations.

At Shelton, George Cropper, resident manager, naturally took an active interest in the machine shop manufacturing of the barkers under Mr. Ellis, which, incidentally, was carried on along with the war work

done at that mill — the machining and finishing of parts for ships and other war jobs directed by Mr. Ellis. Mr. Ellis' chief assistant in the shop is W. F. McCann, master mechanic.

Meder Johnson, resident engineer, was directly in charge of the Port Angeles installation, while L. R. Wood, plant engineer at Grays Harbor, had a similar duty at that mill.

Electrical work at Port Angeles was under Harold Springer and at Grays Harbor under Arthur Boag. They are the chief electricians at the two mills. Millwright work at Port Angeles was done under Sam Wilson and Fred Dangerfield.

Operation of the Port Angeles barker will be supervised by Gordon Johnston, the wood room su-

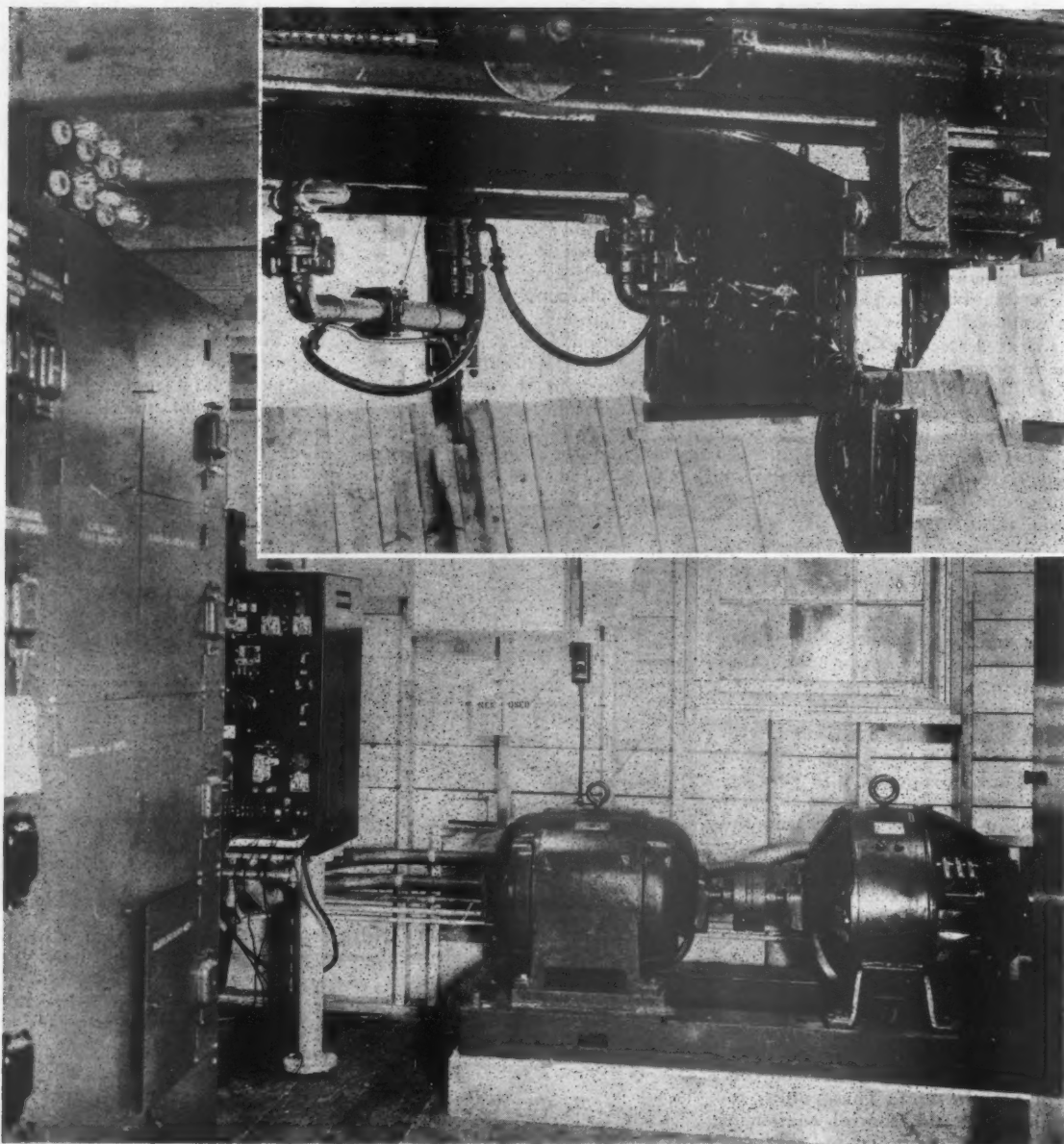


OFFICIALS AT THE PORT ANGELES, WASH., DIVISION of Rayonier Incorporated who were directly in charge of the various installations there for the new barker:

(Left to right) SAM WILSON, Carpenter Foreman; GORDON JOHNSTON, Wood Room Superintendent; HAROLD SPRINGER, Chief Electrician, and MEDER JOHNSON, Resident Engineer.



PLANT OFFICIALS WHO PARTICIPATED in the new installations at the Grays Harbor Division of Rayonier Incorporated. Left to right: L. R. WOOD, Plant Engineer; A. S. BOAG, Chief Electrician, and C. H. WOODFORD, Wood Room Superintendent.



SOME OF THE NEW PORT ANGELES HYDRAULIC BARKING EQUIPMENT.

The inset is a close-up view of the overhead nozzle and carriage.

Below it is the motor generator set equipment supplied by Westinghouse Electric and Manufacturing Co. Left to right, as shown in the picture, are the cubicles, the electric controls, a 30-hp. motor and a generator.

perintendent, with C. H. Woodford, Hoquiam's wood room superintendent, directing the Grays Harbor operations.

Equipment Credits

EDITOR'S NOTE—All drives and motors as well as the entire electrical control system for the two new barkers at Port Angeles and Hoquiam, Wash., described in this article, were furnished by Westinghouse Electric and Manuf. Co.

Frames, nozzle carriage, swing joints, spindles, tail stock and hydraulic control equipment were

manufactured by the Rayonier machine shop at Shelton, Wash.

Sumner Iron Works furnished and machined all loader castings and other miscellaneous parts.

Electric Steel Foundry Co. produced the castings for the high pressure hydraulic swing joints. The pump was from Byron Jackson.

The big cutoff saw ahead of the barker was from Sumner Iron Works and most of the old drives in the older sawmill set-up which is being retained were furnished by Western Gear Works.

Paul Stamm Missing

Pvt. Paul Stamm, U. S. Army Air Corps, 19-year-old son of Ed Stamm, logging manager, Crown Zellerbach Corp., Portland, Ore., was reported missing in action over Normandy during the northern Europe invasion. Another son, Ensign Ed Stamm, U. S. Navy, was injured in Florida recently.

Tom Beaune in California

Tom Beaune, pulp mill superintendent at Fibreboard Products Inc., Port Angeles, Wash., and formerly western manager for Stebbins Engineering & Manuf. Co., and Mrs. Beaune had a two weeks' visit in September in Long Beach, Calif., with their daughter and little grandsons.

WPB Approves Hydraulic Barker for Soundview

● The U. S. War Production Board has approved plans of Soundview Pulp Co. of Everett, Wash., to install a new adjustable ring type of log hydraulic barker. It will be constructed by the Worthington Pump & Machinery Co.

The Everett mill is one of the largest individual industrial users of wood in the entire world, and the possible savings to result from hydraulic barking will run into many millions of feet of wood over future years.

The first unit, authorized by WPB, is a 56 by 100-foot all-steel building with an all-steel log haul.

It will contain a compact barking machine, capable of hydraulically cleaning logs up to 60 inches in diameter and 32 feet in length. The maximum size log barked would weigh 16½ tons.

The first unit also will contain a flexible floor plan for handling logs.

The barker will be a ring-type with three segments, each segment containing a number of nozzles, and the movable parts will be used in a variety of combinations. Water pressure will be about 1250 lbs. psi.

Savings of at least ten per cent in wood have been demonstrated in all the different hydraulic barking systems recently developed for big western logs. It is saved in both a cleaner barking operation and in elimination of wood lost in saw kerf in the breakdown of the big logs, as was required under older methods.

After completion of the first unit at Soundview, barked logs will for a long time be returned to the log pond before going to the chipping plant. A proposed second unit, which is not yet being undertaken, is expected to include new chipping equipment.

It Was Almost a TAPPI Meeting at Port Angeles!

● On Sept. 1, the Port Angeles, Wash., mill of Rayonier Incorporated was visited by a group for the purpose of viewing the new hydraulic log barker there. The group included Carl Braun, vice president and mill manager, Hawley Pulp & Paper Co., Oregon City, Ore.; Carl Anderson, engineer; Joseph L. McCarthy, resident engineer, Soundview Pulp Co., Everett, Wash.; Einar Flateboe, president, and Clinton Briggs, superintendent, Sumner Iron Works, Everett, Wash.; W. H. Rambo, consulting engineer, specializing on wood rooms, Portland, Ore.; and Dick Ellis, manager, Austin Co., Seattle, Wash. They were guided over the plant by Bill Breitenbach, resident manager for Rayonier. Later the same party visited the Crown Zellerbach Kraft Mill at Port Townsend, Wash.

Hawley Starts New Log Barker Plant

● Hawley Pulp and Paper Co., Oregon City, Ore., began construction on Sept. 6, through a construction contract with the Austin Co., Seattle, Wash., of a building to house a new whole log hydraulic barker, the sawmill proper, splitters, and whatever other equipment is necessary to provide the pulp and paper department with properly prepared wood.

The contract with the Austin Co. calls for construction of all foundations and a wood structure of sufficient size to house the above equipment. A dock also is included for a future splitting and chipper plant.

Expenditures as approved by the War Production Board, including equipment over and above that which will be transferred from the present sawmill and wood room, have been set at \$224,000.

The barker is to be of the lathe type, utilizing hydraulic pressure. Two vertical splitters of the cooperage type and one horizontal splitter will be included.

Kellogg on Trip

R. S. Kellogg, secretary of the News Print Service Bureau, made a six weeks' trip in August and September through the Middle West and southern Canada. His headquarters are 342 Madison Ave., New York.



C. A. MICHELS, General Manager, The Great Lakes Paper Co., Ltd., Fort William, Ont., large producers of groundwood and sulphite pulp and newsprint. Mr. MICHELS, who was born in Oregon City, Ore., where his sister, Mrs. Frances Durning resides, made his first trip west in 13 years in September, visiting mills and industry offices in British Columbia, Washington and Oregon.

Accompanying him west was T. L. DUNBAR, President of Chemipulp Process Inc., Watertown, N. Y., President of Capital Wire Cloth & Manuf. Co., Ottawa, and serving in advisory capacity to Ottawa Car and Aircraft Co.

Officials Find Mills Are Wide Awake To Wood Opportunities

● With sawmill waste and small wood comprising ten to twelve per cent of the wood used in western mills today, the western mills did not need any encouragement from either WPB or the Canadian Timber Control to bring all the wood of this type available in Canada across the line.

Last month we reported that the Canadian Timber Control proposed to make available much of this wood. It turned out there was not much available as had been thought and four Washington state mills were already negotiating for all the available supplies.

The investigation by the Canadian Timber Control was available to the U. S. mills but they already had taken action on their own before the study was issued.

Crown Zellerbach Men View Alaska Timber Offering

● On what was described as purely an exploratory trip, H. L. Zellerbach, president, Zellerbach Paper Co., and executive vice president, Crown Zellerbach Corp., and three other Crown Zellerbach vice presidents, R. A. McDonald, Don Denman and Frank N. Youngman, visited in late August the areas near Ketchikan and on Prince of Wales Island in Alaska where the U. S. Forest Service has blocked out stands of timber for a possible pulp or pulp and paper industry.

J. D. Zellerbach, president, and Albert Bankus, vice president, of the Crown Zellerbach Corporation, later visited the same timber areas in Alaska.

Continuing its enterprise toward attracting pulp mills into Alaska to utilize the big timber stands there, the Forest Service, this year, made a new proposal, offering 14 million cords of hemlock and spruce in the vicinity of Ketchikan, for an eventual 525-ton daily capacity pulp plant, was made. Terms of the offer and illustrations were published in the May, 1944 issue of Pacific PULP & PAPER INDUSTRY.

It was stressed by the Crown Zellerbach officials that they were only taking a look at this new offering and accepting an invitation which the Forest Service extended to all interested parties.

The U. S. Department of Agriculture, of which the Forest Service is a part, has consistently refused to consider any suggestions of bringing Alaska timber south in the form of logs for pulp mills in Washington state and has insisted that suitable timber, now entirely in the Tongass National Forest, is available only to such parties as will do first stages of manufacturing, at least, in Alaska.

A pulp plant such as the Forest Service envisages would cost upwards of \$20,000,000, according to industry authorities, or about \$40,000 per man employed. This would make it one of the highest investments in American industry.

Regional Forester Frank Heintzleman of Juneau, who accompanied the Crown Zellerbach envoys, said other companies are sending advance men north soon and that company engineers would be among the visitors.

A tentative proposal by the U. S. Forest Service calls for a 50-year agreement and the installation of a 150-ton first unit mill within three years after the end of the World War. Interested parties are requested to inspect the properties before November 30 next, after which, presumably bids would be called.

H. L. Zellerbach, in an interview with an Alaskan paper, called Mr. Heintzleman the territory's "finest salesman."

Court Victory For Paper Containers

● For the first time since paper milk containers were introduced in Massachusetts five years ago, they have escaped from an unfair handicap in their competition with glass bottles.

The Massachusetts supreme court has denied the authority of the state milk control board to impose an extra one cent charge on milk sold in paper containers.

It was a hard-won court decision, according to reports. It will mean more to the paper industry after the war than now, with lack of paper and machinery preventing expansion of paper container production until then.

DEVELOPMENTS IN SOUTHERN U.S.

Crossett Mills Fully Utilize Their Resources.. Hardwood Headaches.. Experiments with Bamboo..

By W. E. CROSBY

CROSSETT PAPER MILLS

THE Crossett-Watzek-Gates operations at Crossett, Ark., are outstanding demonstrations of what can be done to utilize timber. It is unlikely that any company anywhere on this continent practices any closer utilization of resources.

I went to Crossett by bus from Monroe, where there are a couple of good hotels, and there also is the popular little hotel, Rose Inn, at Crossett itself.

The Crossett Paper Mills, division of Crossett Lumber Co., is a kraft pulp, paper and board operation.

An Oregon man, Peter F. Watzek, is vice president and general manager of the extensive operations—including two sawmills, a chemical plant and the pulp and paper mills.

At the Chicago headquarters of the operations are E. C. Crossett, president, and J. W. Watzek, Jr., vice president of the Paper Mills. E. C. French is secretary and W. C. Norman is treasurer.

C. H. and Aubrey Watzek, widely known Oregon lumbermen, the former a past president of the West Coast Lumbermen's Association, are major stockholders in the enterprise.

Concerning the history of the company, Peter Watzek said:

"When my father left college he went to Crossett, where his father and others were operating a sizeable lumber plant. He worked there for a while and might have remained, but decided it was no place for him and moved on to the Pacific Northwest where he has since been active in the industry. When I got out of school in Oregon I decided to take a look at Crossett. I went to work there and finally elected to make my home in the South rather than in the West."

In any event, much has taken place at Crossett since the Gates interests acquired timber lands and built a sawmill in 1901. As time went on it became apparent to the founders of the business that a new crop of trees grew rapidly on cut-over lands.

(The author of these notes, Mr. Crosby, toured southern United States as a representative of Pacific PULP & PAPER INDUSTRY. He has had many years of experience as an observer and writer on forest industries and forestry problems in other regions of the continent).

From a small community, Crossett is now an industrial center, probably practicing by reason of its various plants, the closest forest utilization found anywhere in the country.

K. O. Elderkin is manager of the Paper Mill.

The company now is using more wood in the pulp plant than in the sawmills. Very small wood is used for pulp, including some gum with pine, sometimes as much as 20 per cent. With four digesters and two wet machines, the pulp capacity is 90 tons bleached and 280 tons unbleached sulphate per 24-hour day. When materials are available, they plan to add a barker and more chipping facilities. They have a new 5,000 KW turbine.

On the lower floor of the paper mill, one 90-inch cylinder machine makes board while a newer 210-inch Fourdrinier upstairs makes kraft paper at one of the remarkably high speeds which are not unusual in the south. The board is 50 tons daily and paper, 200 tons.

Before the war, this company was making considerable progress in developing two-tone board. They make tag board and folding box and filing folder material and have been making a study of possibilities in this field. Multi-wall sack, other kraft wrapping and waxing and asphalt papers are among their products.

Crossett, in its logging activities, has practically ceased doing its own logging and gone 100 per cent on a contract basis. The company owns a timbered area approximately 80 miles long and 35 miles wide and its railroad just about splits the area. They have divided the area into five blocks each in charge of a trained forester and these five in charge of Norman Worthington,

who is manager of the Raw Materials division. Logging contracts are made with individuals or firms and the district foresters look after the contracts, mark trees, scale, plan, etc. Some of the logs are brought to the mill by railroad but more and more are being trucked. They plan to get over the land every ten years or oftener. One block is on a seven-year rotation basis.

Thinning operations are constantly in progress. This provides a supply of pulp wood from the company lands and helps along growth of the remaining stands. Tree growth in this area is said to be about 250 feet per acre per year.

The company has operated a modern chemical plant for quite a number of years. Hardwood is used exclusively as basic raw material. They use material down to 4-inch diameter which results in very close utilization. This plant consumes about 100 carloads per day. The wood is piled in iron cars, pre-dried at 170 degrees Cent., then placed in retorts at 420 degrees. Heat is provided by natural gas which abounds throughout that area. The wood gases are condensed and the resulting liquid pumped to another building where various products are extracted. The large quantity of charcoal produced has an excellent market.

In the distillation plant they use the Suida, an Austrian process. Many products are produced which are now in active demand. Some of the major items are acetic acid, wood alcohol, some creosote oil, tar. They also develop an oil known as a scrubbing oil which is used in the refining process. They also produce pitch.

Mr. Watzek told Pacific PULP & PAPER INDUSTRY that the company could not be doing what it is doing and planning for perpetual operations were it not for the fact that through a combination of its sawmills, chemical plant, pulp and paper mills it is able to utilize just about all the material produced in the woods.

Crossett, which with the excep-

tion of the post office, is 100 per cent company owned is a unique town, as all visitors agree. It now has almost 1,000 houses. Within a rather recent period the company has divorced itself from the retail merchandising business. Not long ago a complete sanitary sewer system was installed. At present every toilet, in every house is connected with this sewer.

The town has a 50-bed hospital leased to and operated by a doctor who furnishes complete medical aid to a married couple and family at a fixed fee of \$1.75 per month and \$1.50 for single persons.

The company runs the utilities but maintains the lowest light, water and natural gas rates in the entire state of Arkansas.

Crossett has over 840 men on its honor roll.

PIONEER TREE FARM

● To the Urania Lumber Co., Urania, La., which sells thinnings for pulp wood, no doubt goes the credit for having established the first tree farm in the United States. Certainly it was one of the first. The company was established about 1898. In 1911 one of the members of the firm, the late Henry E. Hardtner, while a member of the state legislature was instrumental in

securing the enactment of a timber conservation law which likely was the first in the South if not in the whole country. This was a law which enabled a company to make a contract with the state to grow timber on certain specified lands. The state would agree to protest such lands against any raise in assessments for a period of 40 years, after which time the owner would be required to pay a severance tax on timber cut. The land meanwhile, for a 40-year period, is assessed at \$1 per acre. It was a part of the contract that the owners practice good forestry. Mr. Hardtner's company placed 30,000 acres of its cut-over lands under this contract and so really started tree farming early in the century. Chapman, now head of the Yale Forest School, has been keenly and actively interested in Urania's tree farming.

At Urania, where Quincy T. Hardtner is now president and who is second vice-president of the Southern Pine Association, they really practice forestry, not because it is a fad, or because they think it is a good gesture, but because they are definitely sold on the idea that it is good business. In fact, they know it is. They know that because they had the foresight to "do some-

thing" about growing trees and taking care of reforesting lands, they have an operation which can continue forever.

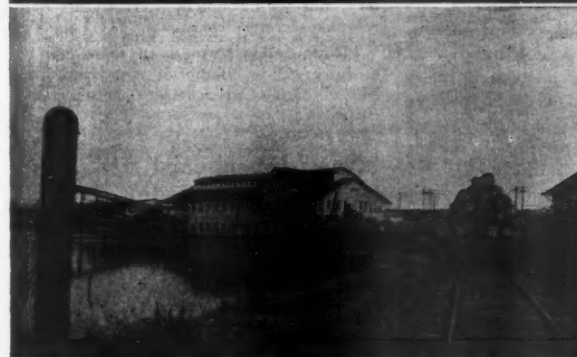
In order to determine exactly what can be done in tree growing and in order to carry on some experiments the company a number of years ago fenced in an eighty-acre plot. They found out a lot of things. They found that to grow trees, hogs should be kept out. They found that fire was an enemy of reforestation.

From one cut-over tract, logged 38 years previously, they logged 5,000 feet per acre and removed less than half the stand.

Like at most other southern pine operations pulpwood is now a big item and so far as Urania is concerned, furnishes a market for a lot of thinning that the management wants to market. Mr. Hardtner told of getting 5 to 6 cords of pulpwood per acre and that thinning hastened growth and speeds up the period necessary to grow a sawlog by ten years. Pulp-size timber, he says, can be grown in from ten to twelve years.

TIMBER MANAGEMENT

● H. C. Berckes, secretary-manager of the Southern Pine Association, in a recently interesting brochure entitled "Southern Pine in



Upper left: Crossett Lumber Company, Crossett, Ark. At left is the company's pulp and paper mill. The tall building at right center is the chemical plant. Lower left: a view of one of the two sawmills. Right: a view of a 45-year-old forest. This forest will yield both pulp mill wood and saw logs.

Transit," had the following to say regarding changing conditions in the southern pine industry:

"Today virtually all the large forest land owners have adopted planned management of their timberlands with the purpose of reproducing the trees which are harvested and maintaining permanent forest products operations upon a sustained yield basis.

"In order to continue operations indefinitely a great many of the large lumber operators have found it necessary to reduce their production to conform to the volume of new growth over specified periods, so that they can produce continuous crops of trees and still maintain their operations and the prosperity of their communities for many generations to come, and provide the great supply to lumber and other forest products so urgently needed for the requirements of mankind.

"The industry assumes a more agricultural nature with its problems, and at the same time is handicapped with every industrial problem. It is not the beneficiary of the relief measures applied to agriculture generally, but it must bear also every industrial hazard.

"In an effort to assure the future of this changing industry, the Southern Pine Association has inaugurated throughout the South a system of Tree Farms. This is a movement, or system, designed to perpetuate the timber supply upon which this industry depends and to secure cash crops for tens of thousands of Southern farmers."

Incidentally, the SPA recently won a prize as the outstanding trade association in the U. S.

HARDWOODS

● Hardwoods are something of a headache in the South, at least some species, not only because of the very large acreage which are occupied by hardwoods but because in some areas hardwood comes in after the pine is cut. There are a great variety of hardwoods, mostly oak and gums. Some of these, of course, have definite commercial values, while others in normal times have not had a marked outlet. Many of the ground-wood mills are cutting fifty per cent or more hardwood. Some of the pulp mills are using some gum. One large plant mixes up to 20 per cent of gum pulp with its pine pulp. Another pulp plant is making a straight gum pulp. It accumulates gum logs and then runs the plant on this species exclusively.

Foresters are giving this matter



HUGH M. LEWIS, who was Mechanical Superintendent for Pacific Mills, Ltd., at Ocean Falls, B. C., until 1941 when he was appointed Manager of a Vancouver steel shipyard, has returned to the pulp and paper industry as manager of Sorg Pulp Co., western headquarters in Vancouver, B. C. M. BALDEN is Resident Manager of the Sorg pulp plant at Port Mellon, B. C. Before coming west, MR. LEWIS was Plant Manager of Provincial Paper Co., Port Arthur, Ont.

During the past three years MR. LEWIS has directed the operations of the south yard of Burrard Dry Dock, Ltd., the Canadian plant that has built more than 50 per cent of all Canada's wartime freighter tonnage. MR. LEWIS' predecessors as manager at Vancouver in recent years were Herman Simpson and Wayne Pendleton.

MR. LEWIS was elected Vice President of the Sorg Pulp Co. as well as General Manager and Director at a meeting of directors recently. Among those in the group who visited the west coast were J. A. HULL, Chairman of the Board of Sorg Paper Co. and President of the Sorg Pulp Co.; J. A. AULL, JR., Vice President and Treasurer of Sorg Paper Co., and DONALD DRISCOLL, President of the Sorg Paper Co., all of Middletown, O. Accompanying the party was H. C. LANGE, consultant, of Dayton, O.

of hardwood careful consideration. In some cases the young hardwood reproduction has been slashed so as to give the pine a chance to get started. The planted seedlings get started faster than those which come naturally.

Some hardwoods are being used in chemical plants, one mill using one hundred cords daily.

CREDIT TO DR. HERTY

● In evaluating the importance of the southern pulp and paper industry, credit is generally given to the late Dr. Chas. H. Herty, an organic chemist, for having demonstrated

that the south offered a great opportunity for the development of a pulp and paper industry. He demonstrated that pitch in southern pine was no obstacle in papermaking. He, with the aid of the chemical industry, established the Herty Laboratory at Savannah, Ga., in 1931, where he proved that excellent papers could be produced from southern pines. He continued his experimental work and demonstrated before he died that rayon pulp could also be produced from southern woods. Since his death, however, no further studies have been made in this department of the laboratory.

Following Dr. Herty's death, his laboratory was acquired by the state of Georgia. Bruce Suttle, a veteran pulp mill man, is now director. The laboratory is actively engaged in numerous studies. Experiments are constantly being made to determine the possibilities of producing pulp from other southern woods, and raw materials, such as from the various hardwoods which abound in the South, and from various grasses, weeds, etc. Currently an experiment is under way on pulping of bamboo grown in Georgia. The facilities of the laboratory are available for use of private companies which want to conduct experiments of their own, confidentially with or without the aid of the laboratory staff.

Sentiment in the South seems to be that only one or two new kraft mills may be built after the war, but several companies are planning expansion of present facilities.

Superintendents' Assn. Opens New Office

The new headquarters of the American Pulp & Paper Mill Superintendents' Association is at 220 East 42nd St., New York City.

George W. Craigie, the New Englander who has already given long and loyal service to the association as field secretary, has set up offices there in his new role as secretary-treasurer.

Headquarters formerly were at Miamisburg, Ohio, home of Bob Eminger, Mr. Craigie's predecessor as secretary-treasurer.

"New" Fibreboard Produced In Sweden

● A new type of fibreboard has been produced by A/B Kramfors in Sweden under a patented manufacturing process. The board, called "Kramfors Plattan," attracted much attention at the annual forestry conference at Stockholm, particular interest being displayed in its resiliency. No heel marks were left when the board was stepped on.

The boards vary in thickness from 3 to 7 centimeters.

Lumberman Plans New 200-Ton Sulphite Mill in Prince George Area of British Columbia

● Plans for the establishment in central British Columbia of an unbleached sulphite pulp mill with a daily capacity of at least 200 tons are announced by W. B. Milner of Vancouver, B. C. Cost estimates range upward from \$5,000,000.

Mr. Milner, who until recently was engaged in the financial business in Toronto, is the new president of Eagle Lake Sawmills, Ltd., which operates at Giscome, 35 miles east of Prince George on the Canadian National Railways.

Mr. Milner told Pacific PULP & PAPER INDUSTRY that construction would go ahead as soon as the government would release the necessary equipment and materials. He said that an actual start would probably have to await the termination of the war.

"Priorities are hard enough to obtain for established, operating pulp and paper mills, let alone mills that haven't even been built," said Mr. Milner. "We'll simply have to wait our turn and be philosophical about it. But the interval will give an excellent opportunity for making a thoroughgoing cruise of the timber areas accessible to the proposed mill."

Mr. Milner and his associates acquired control of Eagle Lake Sawmills early this year from A. R. and Albert M. Spurr, and this operation will form a part of the pulp mill operation, but the company also plans to obtain its raw material from a large number of small, independently owned mills along the line of the Canadian National, east of Giscome.

Mr. Milner says there are more than 100 such mills. While the production of some of these units may be negligible for his company's purposes, the aggregate is substantial and the men behind the new pulp mill project believe that most of their pulpwood will be obtainable from the sawmills already operating in the form of slabs and other mill waste.

The dominant timber species in that area is Engelmann spruce, highly favored for the manufacture of pulp, and Mr. Milner states that a survey has disclosed that large quantities of this material are now being lost to industry through lack of a pulp mill or other processing plants. Much of the timber, growing in dense stands, is too small for economic saw, milling. The distance from the coast has made it economically impossible to ship the material to operating pulp and paper mills. Transportation costs have eliminated what would otherwise be a highly favored source of raw material supply for established mills.

Eagle Lake's timber has been made available by government lease, and while there have been cruises to determine the saw log content of the forest no realistic survey has so far been made to determine the pulpwood possibilities. This survey is about to be undertaken at once, Mr. Milner states.

Promising Industry

● The Prince George district has long been regarded as one of the most promising fields for pulp and paper development in British Columbia, and on several previous occasions negotiations have been started with a view to building a mill at or near the city of Prince George. Before World War I the McLean-Fraser interests of Quebec planned to build a

mill there, and subsequently Frank P. Jones and associates of Montreal negotiated with a view to launching pulp production there on a large scale, an investment of \$20,000,000 being mentioned at that time. The financial instability that followed caused the plan to be dropped. \$20,000,000 would be made available for the enterprise. It seemed probable that actual construction would be started during the late 20's, but the collapse of the securities markets resulted in abandonment of the plan.

At one period Frank Buckley of Vancouver was interested in a Prince George pulp mill project. He and San Francisco financial interests later decided to concentrate on plans for a mill at Prince Rupert, but this was dropped later, too.

In his analysis of the forest resources of British Columbia, F. D. Mulholland, now of the provincial lands department but formerly of the British Columbia forest service, stated:

"Surveys of the greater part of this (Prince George) district have been of a very extensive nature and it is only possible to make a rough calculation of the total sustained yield capacity, which is estimated to be about 900,000 M.B.M. per annum. Of this, only 185,000 M.B.M. is accessible under present market conditions, and the relative inaccessibility of the forest resources should be given due weight when considering the economic possibilities of this district."

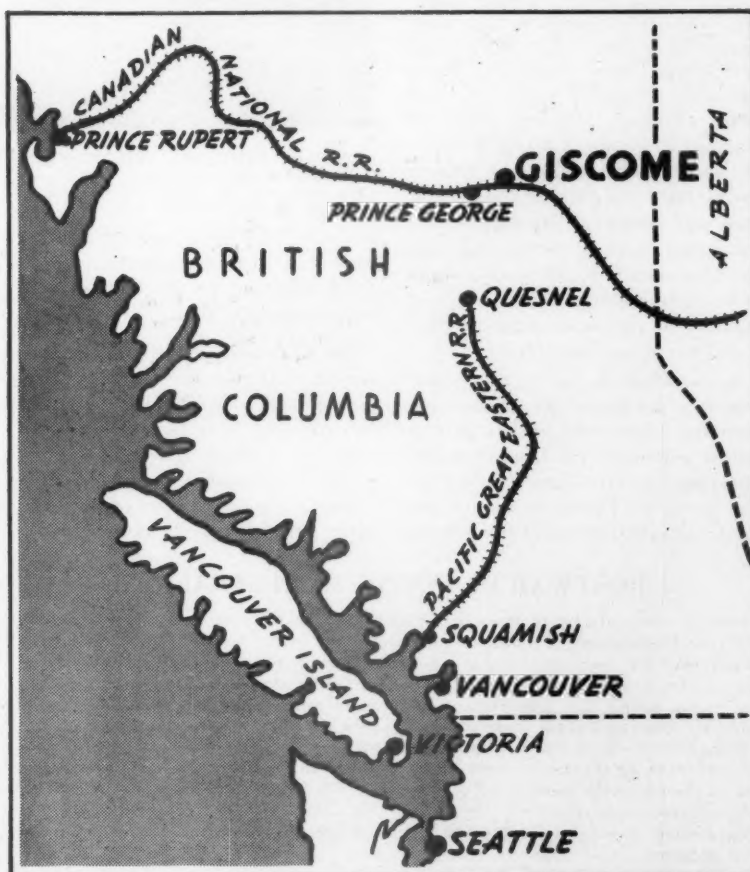
"The sawmills are so far from their

very competitive markets that they are perpetually fighting the handicap of long rail-haul and freight charges. It is unlikely that any great increase in utilization will occur until economic conditions affecting the world pulp market are such that it will be possible to construct a pulp mill to utilize some of the spruce, or until greatly increased demand develops on the prairies. Waterpower is available and it is confidently expected that this development will ultimately take place."

Giscome is located at the western end of Eagle Lake, which provides a natural booming ground for pulp and other logs in the area. Nature of the country and the timber makes logging technique different in the Prince George-Giscome area from the coast. A large proportion of the logs are cut in the summer and fall and transported to the frozen surface of the lake or nearby rivers during the winter. When spring comes the waterways thaw and the logs are floated down to the mill.

Mr. Milner states that the middle western states will provide the logical market for the unbleached sulphite pulp to be produced at the proposed mill. The pulp would be shipped by Canadian National eastward.

If the British Columbia government succeeds in its post-war program to link Quesnel with Prince George by rail, Mr. Milner says that a large proportion of the pulp will probably be shipped west to Prince George, then south over the Pacific Great Eastern Railway to Squamish and thence to Vancouver or Puget Sound ports.



AUSTRALIA'S NEW PAPER INDUSTRY: Spurred On by the Necessities of War

Newsprint mill in Tasmania uses pulpwood which matures in 18 years with logs up to 12 inches in diameter *✓✓✓* Kraft mill is operating in Victoria *✓✓✓* Soda pulp for fine papers is made in Tasmania from eucalyptus wood *✓✓✓* Plans progress for a transparent paper industry *✓✓✓* \$16,140,000 expansion program for newsprint.

(A few years ago there was only one paper manufacturing plant in Australia. All wood pulp was imported. Now there are three pulp and paper manufacturers and several converters. Groundwood, kraft and soda pulps are made from Australian wood. Thousands of Australians are given employment in this new industry.)

AUSTRALIA'S newborn newsprint industry has thoroughly justified its existence since its creation less than half a dozen years ago, even though it probably always will depend to some extent on getting a proportion of its raw material from the Pacific Northwest.

Such is the opinion of P. R. "Dick" Sandwell, resident engineer of Australian Newsprint Mills Proprietary, Ltd., formerly known as the Derwent Valley Paper Co. Mr. Sandwell; whose father, the late Percy Sandwell, prepared the plans and acted as chief engineer until his death in 1941, spent a few weeks in British Columbia and the Northwest states last month, visiting mills, studying technical processes and conferring with operators. He was on his way back to Montreal, where he has been appointed assistant chief engineer of the paper machine division, Dominion Engineering Co.

A Canadian by birth, Mr. Sandwell was graduated in engineering from the University of British Columbia and was with Dominion Engineering Co. in eastern Canada before going to Tasmania to join his father, who had previously made his



GENERAL VIEW OF THE AUSTRALIAN NEWSPRINT MILLS in Derwent Valley, Australia.

home in Vancouver and often served as consulting engineer to west coast pulp and paper companies on construction projects.

Mr. Sandwell feels that he has served through the most critical early phases of Australia's newsprint industry and that he can serve his calling in a wider sphere by returning to this continent, for he looks for a far-reaching expansion of pulp and paper production in both Canada

and the United States during the coming years.

The fact that Australian newspapers have been compelled to ration their paper supplies almost as drastically as those in the United Kingdom indicates what the plight of the publishing business there might have been without a domestic newsprint industry after the Japanese offensive in the Pacific temporarily shut off supplies of newsprint for many months. Australia has been without paper from the United Kingdom and Sweden since early in the war, and during most of the war period has been depending on stocks previously laid in and on the production of Australian Newsprint Mills in Tasmania. Recently, the flow of newsprint from Canada has been resumed to some extent as a result of the improvement in the shipping situation, but Australia is now in a position to produce about 50 per cent

POSTWAR PLANNING IN AUSTRALIA

Postwar plans are being made by Western Australia's pulp and paper industry. The new Department of Industrial Development, in conjunction with the Forests Department, has been conducting widespread surveys of native timber resources to ascertain the availability of timber for a proposed woodpulp industry in the Southwest. It was found that sufficient stands of marri timber were available, and experiments are now being made to determine the best methods of treatment.

Plans for the development of a transparent paper industry which, before the war, had advanced to the stage where consultations with continental experts were being held to determine the possibilities of setting up this industry on an economical basis, are being reconsidered.

Expansions, costing about \$16,140,000, have been proposed for Tasmania's newsprint industry.

VIEWS IN THE AUSTRALIAN NEWS- PRINT MILLS:

Top view—Grinder motors on the left and control panels on the right.

Second view—The beater room.

Third view—The grinder room. Wood, heavier than water, is handled mechanically.

Bottom view—Wet end of paper machine.

of Australian rationed requirements and obviously this domestic production has been a tremendous factor in averting a newsprint crisis in a white man's country isolated from other sources of supply by many thousands of water miles.

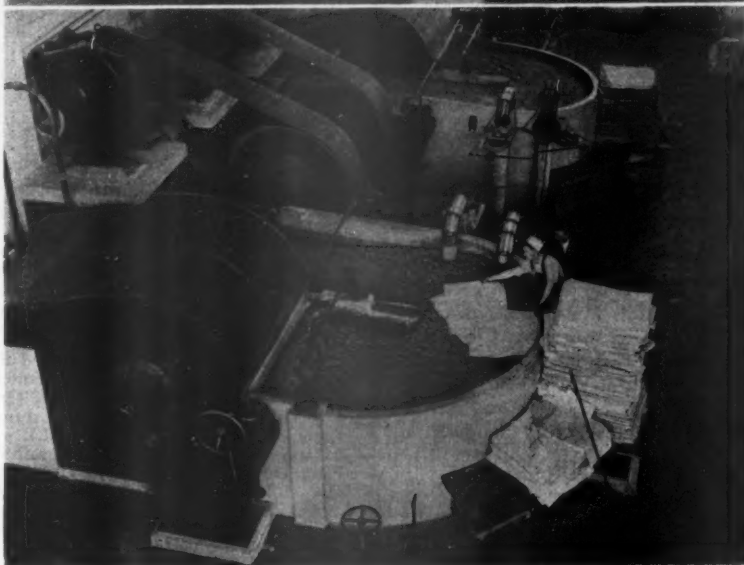
Trees Mature In 18 Years

The Tasmanian newsprint mill is now turning out 30,000 tons of newsprint annually, but the ultimate capacity is 500 tons of paper daily and this is based on the natural rate of reproduction of the native forests. Trees suitable for newsprint manufacture are produced after only eighteen years' growth, reports Mr. Sandwell.

In order to maintain standard quality newsprint it has been necessary to import some pulp from Canada, and the company with which Mr. Sandwell was associated bought an average of 7000 tons a year, chiefly from Powell River Co. and Pacific Mills, Ltd., both in British Columbia. This supply has again been resumed after wartime interruption, but fortunately the Tasmanian mill had ample stocks to tide them over the emergency.

Some of the logs now being used in the manufacture of newsprint in Tasmania run as high as 12 feet in diameter. They are of a species of eucalyptus. Logging technique has been in general based on standard Northwest technique for truck logging, the system having been installed by Paul Fredig, well known in this country, who is now with the U. S. Air Force overseas.

Although Australian Newsprint Mills are the only newsprint producers in Australasia, there are several other plants in the pulp and paper industry in Australia. One of them is Associated Pulp and Paper Mills, Ltd., at Burnie, Tasmania, which produces fine printing and writing paper from soda pulp manufactured from local eucalyptus. Another is Australian Paper Manufacturers, Ltd., which manufactures kraft at Maryvale, Victoria, with board and paper mills at Fairfield, Victoria, and Botany Bay, New South Wales. Then there is Masonite



(Australia), Ltd., in the Newcastle district, producing hard boards, and also Cellulose (Australia), Ltd., at Millicent, South Australia, producing chip and liner board.

In New Zealand there are the Whakatania Paper Mills, manufacturing board products from groundwood produced from *pinus radiata* plantations.

Incidentally, the forest service in New Zealand has made inquiries to this magazine concerning the new methods of hydraulic log barking developed in the Pacific Northwest mills.

The Derwent Valley project, which later became Australia's pioneer newsprint producer, had its origin in experimental work carried out after World War I by Louis Benjamin. A shipload of Australian wood was sent to Pacific Mills, Ltd., at Ocean Falls for a full scale test, and following the favorable report designs for a mill were drawn and construction was started in 1939 under the direction of Percy Sandwell, who in 1936 had been appointed consulting engineer and in 1938 chief engineer. Mr. Sandwell died in January, 1941, only a month before his efforts came to fruition when the mill went into production.

Discussing the Australian situation with a representative of Pacific Pulp & Paper Industry, Mr. P. R. Sandwell stated that expansion of Australian Newsprint Mills to their full capacity would probably await the conclusion of hostilities owing to the difficulty of getting the necessary



P. R. "Dick" SANDWELL, who returned to Canada after serving as resident Engineer of Australian Newsprint Mills Proprietary, Ltd., during its critical early phases.

MR. SANDWELL has since joined the engineering and research department of Ontario Paper Co., Thorold, Ont. For a short period after his return from Australia, MR. SANDWELL was Assistant Chief Engineer of Dominion Engineering Co. His father, the late PERCY SANDWELL, was Chief Engineer of Australian Newsprint Mills until his death in 1941.

equipment.

"Although some may criticize Australia for spending millions of dollars on an industry for which it might not be entirely suited, there is

no doubt that strategic reasons alone have justified the expenditure," says Mr. Sandwell. "Newsprint has become a vital commodity, and Australia is a long way from all regular sources of supply. Establishment of the industry at least as a sort of token if nothing else has been exceedingly important to the country."

Mr. Sandwell mentioned several men from this part of the world who have played their part in getting newsprint production launched "down under." In addition to those already mentioned, there were: L. S. McLennan, assistant chief engineer during the construction period, who has since returned to Canada; C. H. Smith, formerly of Powell River Co., Powell River, B. C., who is mill secretary; E. W. G. Cooper, from the Crown Zellerbach mill at Camas, Wash., paper mill superintendent, and George Lyon, chief draughtsman. Many papermakers who went out to Australia from Canada and the United States have since returned. The company now employs about 300 men. There is, of course, no "native" labor in Tasmania.

It is reported that Ralph P. Worley, a paper mill engineer and cellulose expert from New Zealand, is investigating the possibility of establishing a \$3,500,000 rayon pulp industry in Australia.

Mr. Worley is consulting engineer to the British Australia Co., which hopes to launch the project. Production of 15,000 tons of rayon pulp per year from softwoods and grasses is contemplated.

Macdonald Foresees Paper and Chemical Industries Vieing for Plastics Field

● R. G. Macdonald, secretary-treasurer of TAPPI, writing in the 1944-1945 edition of Barrell's Paper Annual, foresees the chemical and paper industries vieing with each other for domination of new plastics fields.

He writes:

"The postwar period offers a field day for the converter of paper and pulp. It will require great resourcefulness on the part of the paper-use promoters. The enormously expanding plastics field can be predominantly a branch of the chemical, or the paper industry, depending on which makes the greatest promotion effort. The opportunities for development and promotion are further dependent on the quality and intensity of technical effort. At present both technological and promotional efforts are dominated by the chemical industries. Between the two industries (the metal and plastics industries being included in the chemical field), is the converter who takes paper and additive products and combines them to create products that have specific use-value. A few paper companies and a few chemical companies are now also plastics producers. The magnitude

of the field would appear to dictate a continuation of this trend, unless the independent converters decide to rise to the occasion by adequate plant expansion and the application of the increasingly needed technical supervision and development.

"There probably is no doubt that many of the advances made by the pulp and paper industry during the war will be carried over into the postwar period. They certainly can if the industry really wishes this to be the case, even though it is well known that competitive industries are aware of their responsibilities and are, in war, preparing for peace in some of the best appointed laboratories in the country . . .

"The future of the industry is not entirely in the laps of the gods. It is in the hands of executives, chemists, engineers, foresters and the lawmakers in Washington who have the power to encourage individual initiative through sound economic legislation. . . .

"Now is not too soon to prepare for the postwar competition of commodities. Unified industry-wide effort will be needed to have paper and pulp play the leading part of which it is capable."

St. Regis Now Controls Utica Rayon Industry

● St. Regis Paper Co. has purchased certain large holdings of Skenandoa Rayon Corp. common stock aggregating 261,589 shares out of a total of 343,541 issued shares, or more than 75% of the common stock.

Directors of St. Regis authorized an offer to purchase all or any part of the remaining shares of common stock of Skenandoa Rayon at \$10 per share up to Sept. 30.

Skenandoa in 1926 began to manufacture rayon yarn by the viscose process at Utica, N. Y. Expansion of production has reached an annual capacity of 8,000,000 pounds of yarn.

Sampietro Dies

● Joseph Sampietro, veteran Northwest orchestra conductor who several times entertained Pacific Coast superintendents and TAPPI members, died of a heart attack Aug. 9 in Portland, Ore.

He presented outstanding musical programs at the Superintendents-TAPPI Joint Meetings in Portland in 1942, 1943 and 1944. Born in Wellington, B. C., he conducted orchestras in several Northwest theaters and was musical director of a Portland radio station.

New Zealanders Touring U. S. and Canada; National Pulp Mill Debated in Wellington

• A number of New Zealand forestry officials and pulp and paper industry leaders are visitors in the United States and Canada, some of them studying U. S. production methods and others seeking machinery and other equipment for expansion of the New Zealand industry.

Norman J. Dolamore, conservator of forests for the New Zealand State Forest Service, and his associate, Alex S. Mitchell, designing engineer for the service, called at offices of Pacific PULP & PAPER INDUSTRY to discuss new forestry and wood preparation techniques developed in this country and Canada.

They mapped out a tour taking them to visit the principal new hydraulic barking installations and also the small wood logging experiments of the Pacific Northwest, which have been reported upon frequently in issues of this magazine.

They were also planning to visit pine operations in Florida and other southern states of the U. S.

Mr. Dolamore and Mr. Mitchell said hydraulic barking of logs, with resultant saving of wood and increased pulp yield, has aroused great interest in New Zealand.

Although they made no comments on the matter, reports from New Zealand recently told of a project under way there to establish a national pulp and paper industry, owned and operated by the government. A Labor government is presently in power in that dominion. The matter of the national mill is now being debated in the House of Representatives in New Zealand.

At present there are just three pulp and paper mills in New Zealand — two of them make their own groundwood pulp from the native pine. This is the pinus radiata or Monterey pine, known in New Zealand as the insignus pine. The other mill imports pulp from Canada, mixing it with waste paper, for manufacture of kraft papers.

The two mills using local wood are the Whakatane Pulp & Paper Co., of Whakatane, which makes chipboard and boxboard, and Forest Products, Ltd., of Penrose, Auckland, which makes wallboard and insulating board.

The kraft industry is New Zealand Paper Mills, Ltd., of Maitaia, New Zealand. They recently ob-



ALEX S. MITCHELL (left), Designing Engineer, and NORMAN J. DOLAMORE, Conservator of Forests, both for the New Zealand State Forest Service, are presently on a tour of U. S. and Canadian pulp and paper mills and logging operations. Mr. Mitchell's headquarters are at Wellington, N.Z., and Mr. Dolamore's at Rotorua, N.Z.

tained some kraft pulp from a U. S. mill, as well as from Canada, and their kraft containers for diary products shipped to England are reused there in paper manufacture.

Other New Zealanders touring U. S. and Canada at present are E. Brown, general manager, and W. Robinson, a director, of the Whakatane company.

A third party of New Zealanders interested in pulpwood and plywood were also reported in North America.

Industry Men Discuss Plans

• Mr. Robinson and Br. Brown of the Whakatane Paper Mills visited sulphite and sulphate mills in Longview, Hoquiam and Everett, Wash., and also in Canada.

Mr. Robinson, commenting on New Zealand's future plans, said:

"We have large forests on the northern islands to be utilized, and our company has been making boxboard for the entire country for about five years, but no paper for writing or printing, which require bleaching. That is the part of the business we anticipate building up as soon as possible."

In New Zealand, timber is really a crop, as the trees are planted systematically and those planted in 1933 are now being harvested for pulp. The Monterey pine was the tree chosen for planting when the industry was started about 1923. These trees grow remarkably fast and in 10 years are about eight inches in diameter and yield 40 cords of pulp wood to the acre. The trees were planted 1,000 to the acre. The steady rainfall aids in the quick growth, and also makes it possible

to carry out logging operations throughout the year as the weather is mild.

Mr. Brown explained the logging operations in New Zealand, saying the cutting crews are mostly native Maoris, who chop down the trees with axes, cutting everything as they go along — harvesting the crop.

The logs are cut into nine-foot lengths and hauled on sledges drawn by tractors to the loading centers, where they are trucked to railroads and hauled 25 miles to the mill in Whakatane.

Imports of paper and paper products into New Zealand during 1943 indicate a vast increase in the consumption of these commodities. More than 35,000 tons were brought into the country, compared to about 8,000 tons in 1942. One of the most outstanding examples is that of newsprint, imports of which in 1943 totaled more than 20,000 tons, more than 650 per cent greater than in 1942.

Over Million Leaflets Dropped By RAF

• Evidencing the large amount of paper that goes into war propaganda work, it has been revealed that during the first four and a half years of the war the British Royal Air Force dropped 1,264,456,656 leaflets, newspapers and magazines over enemy and enemy-occupied territory. Such paper items are being dropped at the average rate of 1,200 pieces a minute, or 200 tons a month.

Safety Contestants Picnic

• Sixty-five papermakers enjoyed a picnic at Dead Lake on August 10, to culminate a four-month Safety Campaign contest between shifts of the machine room of the Camas, Wash., mill of Crown Zellerbach Corp. Competition was sponsored by Gus Ostenson, superintendent, and Jack Robertson, safety supervisor.

Pioneer-Flintkote To Increase Paperboard Output with \$700,000 in New Equipment

● Pioneer Division, The Flintkote Company of Los Angeles, manufacturers of roofing and building papers, boxboard, test liners, corrugated products, etc., last month was in the preliminary stages of an expansion program calling for an investment of around \$700,000. This will provide for large increased capacity for paper-processing and general paperboard production, raising the big plant's annual output from the paper mills alone by 20,000 tons.

And thereby hangs a tale—a tale of fast action to grasp an opportunity for expansion when additional tonnage of manufactured paper products was so vitally needed for essential government and military needs.

One morning in late March, L. M. Simpson, vice president and general manager of Flintkote's Los Angeles plant, was reading his mail. In it was a form letter addressed to manufacturers of pulp, paper and paperboard from the distribution section, paper division, U. S. War Production Board. It said:

"The manufacturers who build the machinery for making pulp, paper and certain converted products will, in a few days, be allotted an additional amount of material to be used in the production of new equipment.

"It must be kept in mind that the amount of material available at this time will be far short of meeting the demands for all of the equipment you need. Therefore, your request for new equipment must indicate that, by means of it, you will be able to make use of more waste paper, secondary fibres or mineral filler to produce essential government (including military) requirements of specified grades."

Within 24 hours Pioneer Flintkote's general manager had marshaled his facts and was ready to petition WPB for priorities for making improvements and additions to the mill which would result in a production increase of 20,000 tons per year. (Daily production capacity is now rated as 220 tons). And WPB officials quickly granted the priorities based on the following facts:

It was shown to the WPB, according to William A. Kinney, production manager, that the considerable shortage of paperboard now existing in the Southern California area apparently is caused by tremendous growth of war industries and an increased demand for paperboard.

Pioneer-Flintkote and other major mills in the vicinity have operated consistently at full time, on a 24-hour, seven-day week, without serious interruption. This, said Mr. Kinney, was possible because waste paper collections in the area were comparatively well organized, and sufficient supplies made available. The labor situation, although admittedly critical, has been sufficient to meet mini-



L. M. SIMPSON, Vice President and General Manager, Pioneer Division, The Flintkote Co., who seized upon opportunity offered by WPB to increase his plant's paperboard production by 20,000 tons annually.

mum requirements to keep the mill operating full time.

However, rather than either of the above, the area shortage is due to the greatly increased demands on the local paperboard industry because of the tremendous growth of Southern California war industries and its effect on the industry generally. In addition to the strain on paperboard production for direct military and war industry use, is the tremendous influx of population into the area necessitating an increase of production for essential civilian needs.

Greater shortages are foreseen on the Pacific coast, unless relieved, increasing the burden on transportation facilities, etc., to the west coast, as the war becomes more and more focussed on the Pacific theater.

Improved efficiency from new equipment, would also see a greater and more effective use of waste papers, while no additional labor would be required to obtain the increased production tonnage. It was pointed out, Mr. Kinney said, that products previously mentioned are manufactured chiefly from waste papers and, in some cases could replace similar products now shipped into the territory, made mostly of virgin pulp. Principal use of virgin pulp in this mill is for top liners and high products for food packaging.

Description of Equipment

● To trace the developing need for new equipment in the face of modern war demands for paper products, it is interesting to go back to 1923 and dis-

cover in that year a Black-Clawson 4-cyl. combination roofing felt and board machine was installed, with a daily capacity of limited tonnage.

In 1934 three more cylinders and more driers were added. Then, three years later a new machine, of the same make, was installed, this a seven-cylinder board machine, vertical type, said to be the highest unit on the Pacific coast.

By 1940 capacity of the mill was being taxed to the utmost as the nation began its national defense program. Pioneer-Flintkote anticipated far greater needs and put in its third machine, a one-cyl. Black-Clawson unit to relieve congestion on the exclusive board machine and give added tonnage for felt.

This machine made it possible to utilize the full extent of the boilers' capacity, where before there had been some overproduction of steam.

However, within a few months, as war broke out, it was seen that even the new equipment was wholly inadequate to fill ever-increasing requirements for paperboard products and essential roofing material needs for military warehouses and other purposes.

Aside from some additional drying capacity, new vat, new turbin-drive prime mover and steam generator, the priority equipment in project is confined to the stock preparation dept. This includes:

Shartle Bros. hydropulpers, largest of which has a capacity of 150 tons in 24 hours; Jordans, hydrafiners, modern settling troughs, selectraps, classifiers, thickeners and other modern stock preparation equipment.

The stream-flow vat, supplied by Pusey & Jones, is one of the recent new developments in paper-making machinery. The prime mover, is a Terry, 250-hp. turbine. The new steam generator, by Babcock & Wilcox, is a Type F, capable of delivering 60,000 lbs. per hour.

Among the interesting innovations of the expansion program is that of a new plan for handling waste paper. So tremendous has been the influx into the plant that storage facilities have been overtaxed and the company has been compelled to seek additional storage space adjacent to the plant. Moreover, the very congestion has not improved the efficiency of transferring it to the beaters.

Under the new plan a deep basement is to be provided below the unloading platform, with a series of hatches in the latter's wall, and through which the paper is to be dumped to the extent of 200 tons capacity. Conveyors, horizontal and the sloping will carry the waste up to the hydropulpers as needed. This plan is expected to save a great deal of time and labor.

Pioneer-Flintkote, in addition to its

board and felt mills operates, on the same property, one of the largest roofing factories on the Pacific coast, where asphalt is refined and its products manufactured. It also has an emulsion plant, makes asphalt paints, etc., most of which now go to the Army, Navy and Merchant Marine. In this refinery some products of a military nature are being made, on which no information is permitted.

The plant covers 25 acres, and employs 1,200 people, including those in the corrugating plant and folding box plant. There is also a set-up box plant in Hollywood. Steam capacity of the Vernon establishment is 130,000 lbs. hourly, and now to this will be added 60,000 lbs.

The latest piece of equipment added before war froze installations of new machinery was an Asplund defibrator (Paper & Industrial Appliances, Inc.), which has a daily capacity of 30 tons and which has proved valuable in augmenting the war-merger supply of rags.

Solid Fiber Container Regulation Is Relaxed

● Permission to manufacture certain kinds of solid fiber containers in addition to V-boxes without specific War Production Board authorization is provided in an amendment to WPB Order M-290.

Previously the use of solid fiber container production equipment for purposes other than the manufacture of V-boxes without specific WPB authorization was banned.

NEWS OF

The Pulp and Paper Industry--

15 Years Ago

The beginning of war in Europe suddenly reversed the downward trend in the U. S. pulp market which began in late 1937. In late July 1939 prices had been at bottom levels. West coast and southern mills received many inquiries for pulp and U. S. paper industries were fortunate that excess capacity existed in North American mills as Scandinavian and German pulp was cut off.

On Sept. 17, Scott Paper Co.'s Coos Bay pulp mill resumed full operation (60-65 tons a day) after nearly a two-year shutdown.

Dean F. F. Moon, head of the New York State College of Forestry at Syracuse, N. Y., died Sept. 3 after an operation. He was 49.

Fall Convention of the Cost Association of the Paper Industry was held at the Hotel Wausau, Wausau, Wis. Thomas J. Burke was Secretary-Treasurer, with offices at 18 East 41st St., N. Y. C.

The annual service house meeting of the representatives and distributors of the American Writing Paper Company, Inc., was held Sept. 19-20. The opening session was addressed by the then president, Sidney L. Willson, with Russel L. Madden, manager of sales, presiding.

10 Years Ago

On Sept. 4 operation was started of the Dells Pulp and Paper Co. mill at Eau Claire, Wis., by its new owners, Sterling Pulp and Paper Co.—Plant produced fruit wrappers with three or four machines.

For the first time in its history, the Technical Association of the Pulp and Paper Industry met on the Pacific Coast on Sept. 10-13. The meeting was at the Multnomah Hotel in Portland, with some 500 members and guests registered.

Lawrence Killam, as chairman of the Pacific Section, welcomed them. Clark C. Heritage, then president of TAPPI and manager of Oxford Paper Co.'s coating division, presided.

Fall Convention of the Cost Association of the Paper Industry was held at the Chicago, Sept. 24-26. Among highlights was an address on the "Relationship of the Paper Industry to the NRA" by the late W. W. Pickard, formerly deputy administrator of the NRA and later paper industries coordinator.

Progress of New Puerto Rican Container Plant

Puerto Rico Mill Plans To Use Little Bagasse

● The designer of the proposed new paperboard mill in Puerto Rico has written to this magazine, taking exception to statements made in our article of last month on the possibilities of successfully starting a new industry in that territory.

Last month we quoted Puerto Rican business leaders as saying that a paperboard mill planning to use cane bagasse as its raw material would find it very difficult going because sugar mills have priority on most bagasse for fuel.

"I would like to advise," writes Roderrick O'Donoghue, New York consulting engineer, "that this mill is designed to make jute liner board and the main supply of raw material will be waste paper collected in Puerto Rico. This will be supplemented by a small amount of bagasse pulp. The mill under construction in the suburbs of San Juan is half completed and practically all equipment is ordered."

We are, of course, glad to publish Mr. O'Donoghue's comments.

Some equipment for the Puerto Rico plant has been picked up in the used machinery market. Some new equipment also was expected, being released by the War Production Board concurrently with similar releases to plants in continental United States. The Interior Department, which has authority over Puerto Rican affairs, was reported to be interested in seeing the mill started there.

Incidentally, other interesting Puerto Rican developments have been the authorization for construction of a glass



SON AND PROUD FATHER, of the COOS BAY PULP CORP., family of employees at Empire, Ore. LESLIE E. CROFF (left), 2nd class Seaman and Gunnery Instructor, Naval Air Corps, Cecil Field, Jacksonville, Fla., is on leave from the mill where he was employed as a dogger in the pulpwood breakdown plant. LESTER E. CROFF (right), came to the Coos Bay mill in 1935 as Millwright and since 1936 has been a Sawyer in the breakdown plant. This mill has 33 former employees in the service, a good showing in view of a payroll of about 120

plant and a box plant. The paper plant aims to manufacture cartons and containers for shipment of rum and other products.

The name of the company, originally Puerto Rico Development Co., has now been changed to Puerto Rico Pulp & Paper Co.

Brazil Mill Has Trouble Getting U. S. Machinery

● A chemical pulp and newsprint mill under construction in the state of Parana, Brazil, has a planned annual production of 40,000 tons of newsprint, 40,000 tons of chemical wood pulp and 45,000 tons of mechanical wood pulp.

Construction has been delayed by the war but engineers believe that the mill is now far enough advanced to assure production not later than the immediate postwar period.

A number of new pulp and paper mills have been established in the past five years and others are planned. Much of the equipment for these plants is being manufactured domestically because of the difficulties encountered in obtaining machinery from abroad.

Paper manufacturers in Brazil increased production by about 170 per cent between 1938 and 1943 despite a great curtailment of imports of raw materials. They utilized native raw materials including pine, fibrous plants, cotton linters and rice straw.

Longview Fibre Facilities

● Longview Fibre Co., Longview, Wash., has opened a new log dump on the Columbia River at the plant to provide facilities for truck delivery of logs. A large portion of future supply will be truck hauled instead of rafted. The proportion of Douglas fir as against hemlock has been increased.

National Council Pledges Autonomy For Regional Stream Improvement Groups

New York organization gives \$1,000 to University of Washington fund . . . Dr. Gehm reports mills are praised by Public Health Service . . . Wertheimer and Ekholm head far west organization.

● Second of a series of meetings to form standing regional committees to work with the National Council for Stream Improvement of the pulp, paper and paper board industries, was held August 24 and 25 at the Olympic Hotel, Seattle.

In attendance was Dr. Harry W. Gehm, technical advisor for the National Council. Dr. Gehm had recently attended a similar meeting at Lynchburg, Va., where Hugh Camp, Chesapeake-Camp Corp., was elected chairman of the standing regional committee, and Fred Douth, Champion Paper & Fibre Company, vice chairman.

At Seattle representatives of twelve Washington and Oregon mills elected R. S. Wertheimer, vice president and resident manager of Longview Fibre Co., as



Dr. HARRY W. GEHM, Technical Advisor, National Council for Stream Improvement.

chairman of the Pacific Northwest regional committee; and as vice chairman chose Erik Ekholm, general superintendent of Puget Sound Pulp & Timber Co. In electing these men, the representatives considered the National Council's suggestion that the chairman should reside in one watershed area, and the vice chairman represent another. In this instance, Mr. Wertheimer's operations are at Longview, Wash., so that he represents the Columbia River and tributaries, while Mr. Ekholm, of Bellingham, Wash., represents the Puget Sound area.

The mills represented at the two-day conference were those of Coos Bay Pulp Corp., Crown Zellerbach Corp., Everett Pulp & Paper Co., Empire Paper Co., Longview Fibre Co., Puget Sound Pulp & Timber Co., Weyerhaeuser Timber Co., Soundview Pulp Co., St. Helens Pulp & Paper Co. and Fir-Tex Insulating Board Co.

Leo S. Burdon, general manager, Soundview Pulp Co., and chairman of the Washington state mills' advisory committee on the University of Washington mill effluent research program, opened the first day's session. He introduced Dr. Gehm who outlined the program for the fundamental research work at Mellon Institute in Pittsburgh, the

first of a number of foundations projected by the National Council.

Dr. Gehm said the National Council now has a membership of more than 50% of the industry. In the South it is 70%, and reaches as high as 90% in the Tennessee basin. Research will be carried on in sulphite, sulphate and all other divisions of the industry. The program is two-fold in its broad outlines—1. Waste Abatement; and 2. Waste Utilization. There will be no political activities, Dr. Gehm said.

Program Outlined

"Most of all," he went on, "the National Council wants the regional groups to be autonomous. Only you can understand fully your regional problems. We in New York will never attempt to cram any over-all national concept down your throats. Because we hope that the regional groups will be autonomous, and that we in New York will in this respect coordinate and suggest, we also hope that all the mills will be represented eventually."

"Here, more specifically, is what we hope to do in the immediate future. Obtain information regarding research needs. Obtain stream survey data. Gather data on waste utilization. Work with the regulatory agencies. We expect that there will be a close liaison between the planning and budget committee of the National Council and the regional committees, with perhaps a meeting at least annually."

He told of additional research personnel the National Council hoped to get, but stated that they intended to go slowly in this respect. "The kind of men we want are difficult to find. We want men who are keen in organic chemistry and not necessarily paper experts, men who will bring fresh viewpoints to the liquor problems."

"We want also, and this is important, to further determine what you might term the percentage of our responsibility. There are other industries which should be interested in the problem of stream improvement, and some of these have not gone very far in meeting the problem. We don't want to shirk our share of the responsibility, but, among other things, we want to find out just what that responsibility is."

He reported that the industry has been complimented by the Public Health Service for its early exploratory work with the problems of stream improvement.

"The National Council wants to render assistance to the mills, but it will attempt no engineering. Also, it will not be concerned in any way with patents."

Some Proposed Legislation Good

In examining some of the proposed legislation in various states, Dr. Gehm said that two or three bills had been found which were quite acceptable. However, he made note of the fact that on most committees formed for the purpose of discussing the problem, or designing proposed legislation, industry was conspicuous by its absence.

Dr. Gehm presented to Lawson Turcotte, executive vice president of Puget Sound Pulp & Timber Co., and the secretary-treasurer of the mills committee for the U. of W. program, a check for \$1,000 for the purchase of bibliographical research material as a gift from the National Council to the Seattle research undertaking.

First order of business became the election of a chairman and vice chairman of the standing regional committee. Pro-tem Chairman Wertheimer appointed as nominating committee: R. B. Wolf, manager, Weyerhaeuser Timber Co.'s Pulp Division; Mr. Turcotte; and W. R. Barber, technical director, Crown Zellerbach Corp. Before the committee retired, Mr. Wertheimer pointed out that in the west the sulphite mills were contributing about 75% of the funds, and the sulphate mills at least 13%, and that possibly the committee should consider this in nominating a chairman and vice chairman.

If this was strategy on the part of the pro-tem chairman to avoid the permanent chairmanship, it failed. The committee brought back the name of the fibre-board executive along with that of Mr. Ekholm, and the group elected them unanimously.

The meeting was then thrown open to discussion. Mr. Wolf stated that he believed he spoke for all present when he said they were glad to be a part of the National Council.

Dr. Gehm gave the names of the budget and technical committee of the National Council: Stewart E. Kaye, International Paper Co.; Rex W. Hovey, Oxford Paper Co.; Allan Goldsmith, Mead Paper Corp.; J. L. Hobson, St. Croix Pulp & Paper Co.; Henry P. Caruth, Union Bag Co.; R. S. Wertheimer, Longview Fibre Co., and Charles Grondona, Crown Zellerbach Corp.

Mr. Wolf moved, and it was passed, that each mill in the region have a representative on the standing regional committee, and that non-members be invited to be in attendance but without voting privileges.

Second Day

● On the following day, the Washing-

ton millmen and Dr. Gehm met with Dean E. R. Guthrie and other members of the University of Washington faculty engaged in directing and carrying out that research work.

"We have given Dr. Gehm a searching cross-examination," said Mr. Burdon, in opening the second days' conference, "and we are convinced that our case is in good hands." Dr. Gehm then answered questions of the University staff.

Dr. Gehm met at the conferences after visiting a number of operations in the Washington and Oregon area, and following his meeting with the Virginia, North Carolina, Tennessee and West Virginia industry executives.

He took his graduate work at Lafayette University, then did post-graduate work at Columbia and Rutgers. For some time he was with the agricultural department of the state of New Jersey, and also did considerable research and study for public utilities on the eastern seaboard.

Members of the industry's technical committee for the University of Washington mill effluent research program present were as follows: R. E. Brown, Rayonier Incorporated, chairman; Roy S. Hatch, Weyerhaeuser Timber Co.; N. W. Coster, Soundview Pulp Co.; Mr. Barber and Mr. Ekholm.

Port Townsend Mill To Make Oil Savings

● An annual saving of 73,000 barrels of oil will be made possible by complete modernization of the mill furnaces at the Port Townsend, Wash., kraft mill of Crown Zellerbach Corp., according to Resident Manager E. W. Erickson.

Importance of such savings in these times is doubly significant on the Pacific Coast where oil supplies have tightened up.

Construction of a building for a 150-ton per day standard Tomlinson kraft waste liquor recovery furnace, replacing three Wagner units, was to begin this month and the unit will be completed next year. The mill already has a 120-ton and 75-ton daily capacity Tomlinson units which previously replaced older modified Wagner and other old spray type units.

The bigger units make possible increased efficiency in the burning of cooking liquors to make steam.

Russian Pulpwood Costs Proving High

● We are informed by government officials that the Russian wood coming in to East Coast pulp mills is proving too expensive to be more than a temporary stop-gap during the current critical pulpwood shortage.

This magazine previously reported on comments of technical men in the industry praising highly the qualities of the barked Russian spruce which has been arriving at certain mills. One individual asserted it was the finest wood they ever had to work with.

But costs are going to be a paramount consideration in postwar mill operations and this may militate against continuation of imports of barked Russian spruce, it is said.

Madden Praises Mills For Increasing Production with Less Manpower

● Lowered wood inventories in west coast mills faced U. S. War Production Board officials and members of the West Coast Pulpwood Industry Advisory Committee when they met in Seattle August 28.

That the situation is one of tremendous importance to the entire paper industry is evident because of the continuing extensive use of western pulp in eastern mills, despite the increased diversion of western pulp to eastern arsenals for manufacture into smokeless powder.

Inventories of pulp logs in Washington and Oregon as of August 1 were 273,000,000 feet (about 450,000 cords). This was well above the August 1, 1943, figure of 194,000,000 feet, but was far below the corresponding 1941 figure of 458,000,000 feet and 1942 figure of 326,000,000 feet.

This also was a reckoning that came before a mid-September development—a shutdown order on September 9 affecting all logging operations in western Washington and Oregon because of the extreme fire hazard.

The unseasonal hot weather brought this order which cut down the pulp mill receipts at the rate of 4,500,000 feet (7,500 cords) per day. As this issue went to press, it was not expected the shutdown would last many days.

The government officials, at the Seattle meeting, were unable to hold out any hope of government assistance or offer any tangible plan for remedying a situation which appeared to be getting no better.

uation which appeared to be getting no better.

No relief was offered by WPB or Manpower agencies but, on the other hand, the officials put it squarely up to loggers and operators to maintain production by "their ingenuity" and "cleverness," to use the phrases from the government report of the meeting. It was a meeting closed to reporters, as are all industry advisory sessions.

James L. Madden, who was reported as resigning from his position as deputy director of the paper division, WPB, in charge of pulpwood production, in our last month's issue, came west for a "farewell" meeting with the operators before returning to his post as vice president of Hollingsworth & Whitney Co.

Curtis Hutchins, who succeeds Mr. Madden in the WPB, came west with him and visited pulp and paper mill operations in the Columbia River area. Mr. Hutchins, in private life, heads a Maine pulpwood producing company.

Henry Champeaux, western representative of the paper division, WPB, is government presiding officer of West Coast advisory committee.

Mr. Madden congratulated western mills on their resourcefulness in increasing production with less manpower in this past year. He said:

"An indication of the seriousness of the decline in inventories is shown in the following percentages representing reductions: Waste paper, down 59 per cent; wood pulp, down 56 per cent; pulpwood, down 28 per cent; new paper, down 26 per cent (wholesale stocks). Military requirements for pulpwood are increasing greatly, leaving less available for civilian use.

"Army and Navy requirements of pulp used in the manufacture of explosives and ammunition will be more than twice as high in the third quarter of 1944 as in the first quarter," Madden said, "and present estimates are that fourth quarter demands will exceed those of the third quarter."

As a result of the increase in war needs for paper, substantial improvements in pulpwood production and waste paper collections during the first half of 1944 have not been sufficient to balance the demands despite further curtailment by WPB in supplies of paper for civilian uses, he explained.

Members of the West Coast committee are: Taylor Alexander, Columbia River Paper Mills; Myron W. Black, Inland Empire Paper Co.; Carl Braun, Hawley Pulp & Paper Co.; E. E. Flood, Pacific Paperboard Co.; Walter DeLong, St. Regis Paper Co.; D. S. Denman, Crown Zellerbach Corp., Seattle; J. C. Hayes, Everett Pulp & Paper Co.; P. H. Henderson, Rayonier Incorporated; Irving Rau, St. Helens Pulp & Paper Co.; C. E. Ridgeway, Soundview Pulp Co.; R. W. Simeral, Fir-Tex Insulating Board Co.; Wylie Smith, Coos Bay Pulp Corp.; Lawson Turcotte, Puget Sound Pulp & Timber Co.; H. M. Washbond, Spaulding Pulp & Paper Co.; R. S. Wertheimer, Longview Fibre Co., and R. B. Wolf, Weyerhaeuser Timber Co.



FIRST LIEUT. MAX OBERDORFER, Jr., Transportation Corps, U.S. Army Service Forces, who has been on leave as Plant Engineer, St. Helens Pulp & Paper Co., St. Helens, Ore., since being drafted in April, 1943. His father is President of the St. Helens company, producers of kraft pulp and papers.

Lieut. Oberdorfer is now engaged in procurement of army vessels and is stationed in Seattle. He and his wife are making a temporary home in the Olive Tower Apts. in that city.

British Columbia Industry Presents Its Case Before Investigation Body

● British Columbia's pulp and paper industry presented its recommendations on forest policy to the Sloan Commission in Vancouver in the form of briefs prepared by several leaders of the industry, representing Powell River Co., Pacific Mills, B. C. Pulp & Paper Co., Sorg Pulp Co., Sidney Roofing & Paper Co. and Westminster Paper Co.

The commission, headed by Justice Gordon Sloan of the British Columbia Court of Appeal, has been making a thoroughgoing survey of the forest industries with a view to laying the framework for future legislation.

Major recommendations of the pulp and paper industry were:

1. That a Forest Board be appointed to advise the British Columbia government in matters related to major forest policy and to encourage co-operation between the government and industry.

2. That a commission of experts be appointed to implement a program of sustained forest yield.

The industry recommended that the provincial forest branch continue generally as at present organized for the administration of forest policy, but that in view of expected expansion of activity provision should be made for increased personnel and more attractive remuneration for technically trained foresters.

Individual briefs bearing on various aspects of the industry's case were prepared by J. A. Young, vice-president and treasurer, Pacific Mills, Ltd.; L. K. Bickell, chief chemist, B. C. Pulp & Paper Co.; George W. O'Brien, vice-president, Powell River Co.; H. J. Hodgins, forester, Pacific Mills, and Lawrence Killam, president, B. C. Pulp & Paper Co.

The suggested forest board would have no administrative powers, but it would have an advisory capacity and serve without remuneration, its personnel being chosen from the government, industry, labor and the forestry profession.

Members of the proposed commission of experts would be paid a salary and their jobs would be to work with the board in the formulation and maintenance of a sustained yield program in the forests.

Foley Introduces Case

● The industry's case was introduced by Harold S. Foley, president of Powell River Co., who said there was a feeling within the industry that its importance in the economic and social life of the province often went unnoticed.

"Although the pulp and paper industry consumes only some 10 per cent of the logs cut in the forests of British Columbia, it represents 20 per cent of the direct employment, 35 per cent of the value added to the forest resources and 55 per cent of the capital invested by the log-using industries," said Mr. Foley.

The dependence of the forest industries on the export market was emphasized by Mr. Foley.

Even before the final cessation of hostilities we may expect a tapering-off in the demand for some forest products," he said, "together with the re-opening



WILLIAM BARCLAY, who entered service of Powell River Co. as a junior clerk 28 years ago. Today he is Vice President of Powell River Sales Co., and his recent appointment to that position demonstrates once again the scope offered for advancement in this pulp and paper organization.

Mr. Barclay was born in Glasgow, Scotland, in 1885. As a child he came to Canada and later settled in British Columbia in 1898. He was educated in British Columbia and Spokane, Wash.

of sources of supply, particularly in the Baltic countries.

"Russia, for example, is a tremendous potential source for all forest products in the post-war period. The need for foreign exchange rather than costs of production are likely to dictate export policy and selling prices in the managed economy of this country.

"The present sellers' market for all forest products is an unsound basis upon which to formulate a forest policy. In less time than we care to think, the emphasis may shift from production to the problem of finding markets."

Lawrence Killam, president of B. C. Pulp & Paper Co., stated: "Managed forestry ultimately aims at a rate of consumption not in excess of the sustained yield of the forests. There appears to be cause for concern in this connection, particularly in certain coastal regions. Therefore it is our opinion that it is now important to plan for our future forests, with the objective of sustained yield management. It should be realized that we are dealing with an economic problem which has developed through 70 years of partial depletion of our more mature forests.

"Both public and private interests have derived a temporary benefit from this depletion and established standards based upon such a policy. Now we are faced with the problem of replacing this policy with one which will provide for the future and make perpetual forest crops a reality.

"We must arrive at the responsibility,

financial and otherwise, which governments and private interests must assume in developing a new forest policy. We urge that the problem be approached with the full co-operation of the provincial and Dominion governments, the public and the forest industry."

J. A. Young, vice-president of Pacific Mills, Ltd., dealt with some of the economic aspects of the industry's position.

"The investment in the pulp and paper industry is the highest of all British Columbia's industries," said Mr. Young. "Of the six companies in the province none has an investment of less than \$1,000,000 and the average today is well over \$10,000,000. Investments of this magnitude cannot be maintained without continuous operation.

"In 1942, a total of \$8,824,524 in wages and salaries was paid to the employees of the industry, and many more millions were spent for supplies and raw materials and in maintenance.

"Although today many of the industry's products are for war, the conversion to peacetime production will cause no real technical difficulties. Machinery and plants used for the production of war goods will be just as suitable for the production of peacetime products."

Plans of British Columbia Industry Are Outlined

● British Columbia's pulp and paper mills are taking steps to place the industry on a footing to meet the keen competition expected in the postwar period, particularly from Swedish and Finnish mills, according to Donald H. Baker, chemical engineer, who made an exhaustive survey for the Sloan Royal Commission, now investigating forest conditions in Canada's west coast province.

In telling about the industry's plans for the future, Mr. Baker recalls that it was seriously upset by unequal competition from northern Europe in the period 1930-34 and again in 1938.

"Reports indicate that Sweden has taken advantage of the war and foreign capital," states Mr. Baker, "to install a large pulp and paper capacity of the most modern and efficient type. In addition, Sweden and Finland have had producers' associations in the past which enjoyed the support of the government, and indications pointed to the industry being on an outright subsidy basis."

In his testimony to the commission, Harold Foley, president of Powell River Co., also emphasized the danger of European competition and stated that pulp and paper from Russian mills would probably have a wide distribution in world markets, particularly if the Soviet had access to the sea as ports other than those in the north.

Mr. Baker says that two British Columbia companies believe that diversification is the safest method to insure steady operations and independence of market "squeezes" that occur from time to time. Thus, more highly integrated mills are planned combining the sawing of lumber and the use of pulp grade logs and lumbermill falldown to manufacture the principal types of kraft, sulphite and groundwood pulp. This

ideal, he says, is sought at present, to some extent, in three operating mills. Other B.C. mills believe that specialization and the reduction of costs by modernizing and improving plant equipment and the maintenance of very high quality standards will serve the same purpose.

One British Columbia company, he reports, intends to expand its production of finished papers, container board and allied products.

All the mills, says Mr. Barker, intend to improve present wood breakdown and bark removal sawmills. Hydraulic barking, similar to the processes employed in United States mills, is considered a "must" by four mills, and is under consideration in the fifth. It is probable two mills will have an installation operating within two years. One of these mills, as previously announced, is Powell River Co.

3 More Camas Men Lost

● Eugene R. Brundage and Curtis R. Barnett, on leave from the Camas, Wash., mill of Crown Zellerbach Corp., were killed in action in recent weeks somewhere in France. Brundage was in the traffic department.

Lawrence Kaplin, from the technical control department at Camas, where he had worked since 1935, was reported missing in action in France on August 8.

Medal for Bravery

● Flight Officer Russell V. Strandberg, pilot of a glider in the recent invasion of Normandy is now holder of the Merit Award for bravery in action. The young officer, former member of the Puget Sound Pulp & Timber Co.'s shipping force, was one of the first men to enlist from the plant.

Winlow New Sales Chief for E. B. Eddy; Fair Becomes J. R. Booth Sales Manager

● On Sept. 12 a dinner to honor George C. Winlow of J. R. Booth Co., Ltd., Ottawa, Ontario, Canada, was held with about 80 guests present. The dinner commemorated Mr. Winlow's 50th year in the pulp and paper industry. The anniversary of this remarkable record was September 6, and the dinner was held as near to that date as practical for the officials and guests.

On Sept. 1, Norman B. A. Fair succeeded Mr. Winlow as sales manager of J. R. Booth Company, Ltd., and the latter became director of sales and a member of the board of directors of

the E. B. Eddy Co. Fair had been assistant sales manager.

J. R. Booth Co., Ltd., is one of the oldest and best known organizations on the North American continent. It manufactures newsprint, drawing paper, corrugated, book, kraft wrapping, and other grades.

With reference to the dinner honoring Mr. Winlow, Mr. Fair said: "Fifty years in the paper business is certainly something of an achievement, especially in these troublesome times when the industry is beset with so many additional problems."

Selinsky Is New P-F

Asst. Production Manager

● J. H. "Jerry" Selinsky joined the Pioneer Division, Flintkote Company, Los Angeles, in August as assistant production manager, working with William A. Kinney, production manager.

Mr. Selinsky had spent two years as assistant to the vice president in charge of operations, Pacific Portland Cement Co., San Francisco. Previous to this he had been connected with the U. S. Gypsum Co. for 17 years.

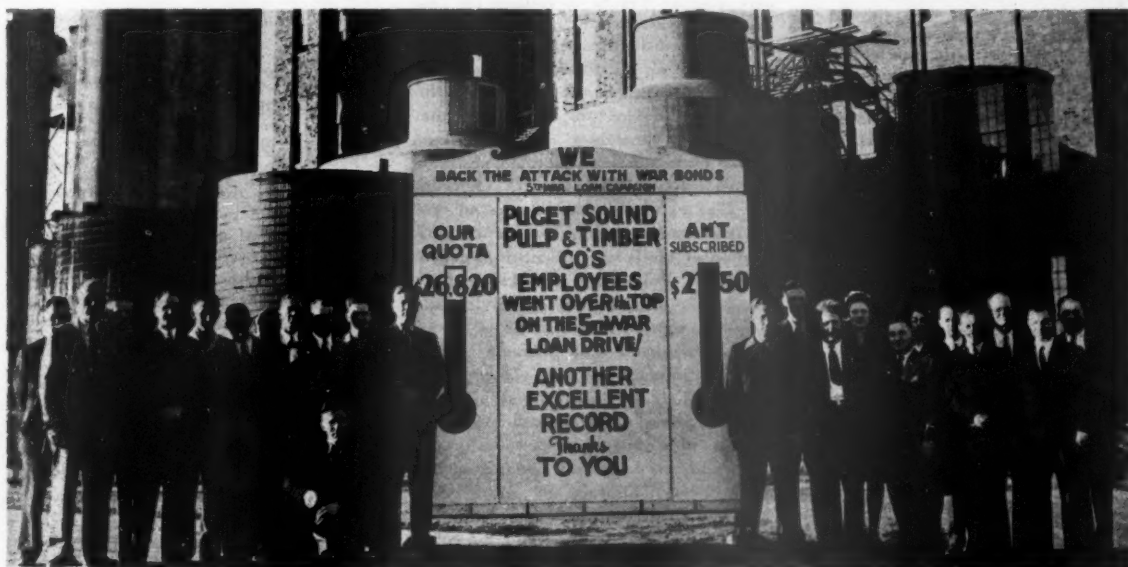
Big Equipment Program

● U. S. daily newspapers will be in the market for postwar mechanical equipment, aggregating an estimated dollar value of more than \$55,000,000, according to an Editor & Publisher survey among large and small dailies from coast to coast.



E. P. ENGNESS, Manager, Bates Valve Bag Co., Vancouver, B. C., subsidiary of St. Regis Paper Co., which will move to a new location in Vancouver, B. C., as soon as it is possible to build a new \$70,000 reinforced concrete building for

the company. The new building will permit expansion. It will be at 11th Ave. and Arbutus St.



CHAIRMEN AND CAPTAINS OF THE FIFTH WAR LOAN DRIVE of the Puget Sound Pulp and Timber Co., in front of the sulphite mill, Bellingham, Wash. Left to right: Clayton Rogers, general division chairman; Dow Smith, R. Davatz, Les Clarke, Harry Telgenhoff, Walter Sewell, Max Aldrich, O. Martinson, Glen MacDonald, sulphite mill chairman; Faben Gallagher (kneeling), Tom Hutchison, Ed Scribner, Thornton Behme, machine room chairman; William Keyes, C. Duke, Irene Haugen, J. Simpson, Hutch Harder, Gus Okerlund, Carl Paulsen, general chairman of drive; Carl Knutsen, James Donald and Bert Hansen, wood room chairman. Peter Anderson, maintenance staff chairman, and Fred Gilmore, a captain, were not present.

A steak dinner was given for this group for raising over \$27,000, at which talks were made by Executive Vice President Lawson Turcotte, General Superintendent Erik Ekholm and Treasurer William Sealy.

(On this and following pages, two papers are published dealing with a problem that faces all cellulose-using industries—the standardization of viscosity testing methods. Also we published a statement of the nature of the problem by Raymond S. Hatch, chairman of TAPPI's viscosity subcommittee).

Nature of the Cupriethylenediamine Cellulose Solvent

By R. M. LEVY and P. MUFFAT

Director of Research and Research Chemist,
Respectively, of Ecusta Paper Corp.

● Since the presentation of the original paper on the use of cupriethylenediamine as a solvent for the disperse viscosity of cellulose (15), considerable interest has been shown in the method and several modifications made (5) which indicate that this solvent is useful for both a precise and a routine means for determining the viscosity of cellulose. This solvent was found to possess many distinct advantages over the classic cuprammonium hydroxide which has been used quite extensively in recent years to measure cellulose quality. The merits of the cupriethylenediamine solvent over cuprammonium hydroxide have been pointed out in a previous paper (15) and also by Hatch (5) and others who have done considerable work with this solvent under various conditions.

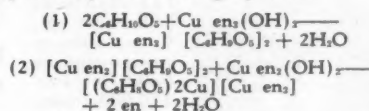
Unfortunately much confusion exists as to the exact nature of these various cupriamine complex cellulose solvents. A tremendous amount of experimental work has been done to give some insight as to the nature of the various copper complexes, as well as, their reactions with cellulose. A great deal of pioneering work has been done in this field by Traube (17) and Hess (6, 7), and more recently by Jolley (10). There is, however, considerable disagreement between the various workers as to the nature of these complex compounds, and from the evidence presented there appears to be some justification for such disagreement. It was for this reason that the authors decided to make a comprehensive study of the factors involved in the various complex reactions, summarize the previous work that has been done, and attempt to bring into agreement the facts concerning the nature of the actions of the cupriamine compounds, especially cupriethylenediamine. It is hoped that such a study will bring a better understanding forward which will aid in the future application of cupriethylenediamine to the problems of cellulose viscometry.

Previous Work

● The theory of Traube (17) on the nature of cupriethylenediamine and its reactions with cellulose may be given in the following brief account:

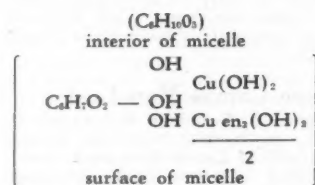
The symbol en is used to represent the ethylenediamine molecule, $\text{NH}_2 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{NH}_2$.

Traube assumed that an aqueous solution of ethylenediamine saturated with cupric hydroxide formed the simple compound $\text{Cu en}_2 (\text{OH})_2$ in which the ratio of copper to diamine was in the exact molar ratio of 1:2. From investigations of the copper complexes of the simpler polyhydric alcohols such as glycerol and mannitol, and their similarity to the reaction of cellulose, he concluded that the interaction of cellulose with cupriethylenediamine could be expressed by the following equations:



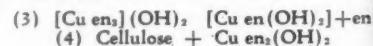
Equation (1) represents the formation of an alcoholate which further reacts with cupriethylenediamine to form the complex copper-cellulose compound given by equation (2). These equations were used by Traube to explain the fact that saturated solutions of cupric hydroxide in aqueous ethylenediamine acquired the power of dissolving an additional amount of cupric hydroxide when cellulose was dissolved in them, and that after this "secondary" dissolution of cupric hydroxide the solution was able to dissolve a further amount of cellulose. The excess ethylenediamine set free was supposedly responsible for the dissolution of the further quantity of cupric hydroxide. Takamatsu and Horie (16) found that the addition of ethylenediamine to cupriethylenediamine solutions of cellulose caused an increase in the electrical conductivity and a decrease in the optical rotatory power, with the ultimate precipitation of the cellulose. This was also described in a previous paper (15) and the electrical conductometric curves given. This fact appears to be in agreement with the theory of Traube if the equilibrium is represented by equation (2).

Lieser (11) considers that cellulose in cupriethylenediamine solutions exists as an addition compound in which the molar ratio of ethylenediamine to copper is two to three, and that the anhydroglucose units in the micellar surface, assumed to be half the total glucose units, are involved in complex formation thus:

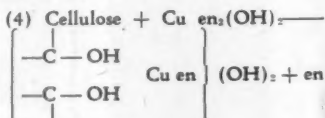


Hess (6, 7), and Trogus and Sakurada (18) obtained results similar to Traube for the "secondary" dissolution of copper and the formation of a copper-cellulose complex anion.

Jolley (10), on the other hand, assumes that the active component responsible for cellulose dissolution and complex formation is the undissociated cupri-mono-ethylene-diamine rather than the cupri-di-ethylene-diamine. He represents the equilibrium in the absence of cellulose as,



and the equilibrium in the presence of cellulose as,



Jolley states that the reaction mechanism proposed by Traube does not appear capable of explaining all of the experimental observations. No particular merit is claimed by Jolley for the mechanism he has proposed, but he states that it explains the experimental observations in a formal manner; that is, the effect of sodium hydroxide in increasing the solubility of cupric hydroxide in aqueous ethylenediamine solutions, the increase in conductivity on addition of ethylenediamine with ultimate precipitation of cellulose, and the ratio of copper-ethylene-diamine-cellulose in the complex.

Jolley also found in the course of his experimental work that the ratio of diamine to copper in solutions saturated with cupric hydroxide varied from 1.78 to 1.89 depending on the concentration. In his studies of the cuprammonium hydroxide system he observed the effect of increasing the ammonia concentrations on the solubility of cellulose. In this latter system an increase in the ammonia concentration at constant copper content increases the solubility of cellulose, quite

opposite to that which is observed in the cupriethylenediamine system. Jolley stated that no reason has ever been advanced to account for these differences in the two complex systems, and further stated that a satisfactory solution of all the problems raised by a study of the solubility of cellulose in solutions of the cupramine bases requires a more fundamental knowledge of the equilibria existing in these solutions in the absence of cellulose than is at present available.

Hoffmann and Bruch (8) concluded from their studies of the cupriethylenediamine system by a partition method, that these solutions contain besides the ion $(Cu en)_2^{++}$, free ethylenediamine, $Cu en^{++}$ and $Cu en_2^{++}$. Rosenblatt (12) also deduced the existence of the $(Cu en)_2^{++}$ ion in saturated solutions, and found the cupri-di-ethylenediamine complex was present in solution as the di-aquo ion, $Cu en_2(H_2O)_2^{++}$, in which the copper atom exhibits a covalency of six.

Light-Absorption Studies

• Vosburgh and Cooper (19) in a recent paper extended the original work of Job (9) for the spectrophotometric determination of the composition of complex ions in aqueous solution.

Since the spectrophotometer has proven to be of much value in elucidating the structure of complex ions in aqueous solutions, it was decided to examine the copper-ethylenediamine system by Job's method of "continuous variations" as applied by Vosburgh and Cooper.

In this method the optical density at a predetermined wave length is measured with equal molar solutions of the two components mixed in varying proportion at constant volume. A value Y is found by taking the difference between the measured optical density and the optical density that the solution would have had if there had been no reaction on mixing. The concentration at which Y is a maximum determines the composition of the complex. The reader is referred to this excellent paper of Vosburgh and Cooper for details concerning theory and a complete discussion of the method.

Figure 1 shows the values of the measured optical density of 0.01 N solutions of copper sulphate and ethylenediamine at the various molar ratios of diamine to copper. Figure 2 shows the values of the difference Y, between the measured density and that calculated from the density at the same wave length of the pure copper sulphate solution, assuming no reaction on mixing the two solutions. The wave lengths used were selected according to the method given by Vosburgh and Cooper.

From these data we have obtained, it is possible to conclude that the ions $(Cu en)_2^{++}$ and $(Cu en)^{++}$ do exist, however, no evidence could be found here for the existence of the $(Cu en_2)^{++}$ ion. From the curves thus obtained it can be concluded that the $(Cu en)_2^{++}$ ion does not exist in dilute solutions.

Cole, Shreaves, and Bowden (3) in their work on the spectro-photometric

PROCEDURE FOR ARRIVING AT A SOLUTION OF THE PROBLEM

By RAYMOND S. HATCH

Director of Research,
Pulp Div., Weyerhaeuser Timber Co.

• The papers on "The Nature of the Cupriethylenediamine Cellulose Solvent" by Levy and Muffat and "Rapid Cupriethylenediamine Viscosity Method for Control Work" by Levy, Muffat, and Harrison (published on this and following pages) were presented at the viscosity symposium held at the annual TAPPI meeting in New York in February, 1944.

These papers again call attention to the desirability of arriving at some standard, accurate, and relatively rapid method for the determination of cellulose viscosity.

The paper by Levy, Muffat, and Harrison calls attention to the lack of stability of cuprammonium solutions which have been used previously for viscosity determinations and propose the use of cupriethylenediamine as a solvent for cellulose viscosity determination.

While it has been known for a long time that the cupriethylene diamine complex was a solvent for cellulose, ample recognition should be given to Straus and Levy for the careful pioneering work they did in determining the method of preparation of the solvent and a study of the behavior of cellulose dispersions in cupriethylene diamine.

The paper by Levy, Muffat, and Harrison, which is presented in this issue, proposes a rapid method for determining cupriethylene diamine viscosity in process control. The writer has also proposed a rapid method for viscosity determination using a somewhat different technique¹. A study of the methods proposed by the two different laboratories indicates that either method may be used for the preparation of the sample and the determination of the viscosity.

Nothing is to be gained at the present time by going into a detailed description of the reasonings why either one of these methods is most desirable, since many factors control the choice of method. The fact that two rather distinct methods for viscosity determination are recommended makes it evident that considerable study and cooperative work will have to be done by different branches of the cellulose-using industry before a final standard method is adopted.

The writer believes that the most important consideration at the present time would be the acceptance, by all branches of the cellulose-using industry, of cupriethylene diamine as a solvent instead of cuprammonium solutions. At the present time different standards of concentration of copper and ammonia are used by TAPPI and by A.C.S. in their present tentative standards, and the effect of differences of copper and ammonia concentrations have been pointed out by the writer².

By changing to cupriethylene diamine as a solvent, the cellulose industry would have a solution of fixed composition and one which is less susceptible to the effects of atmospheric oxygen. The actual methods of preparing the samples for viscosity determination, the concentration of the cellulose dispersion, and the type of viscometer used, could then be finally settled through the joint efforts of the various groups concerned for the determination of viscosity.

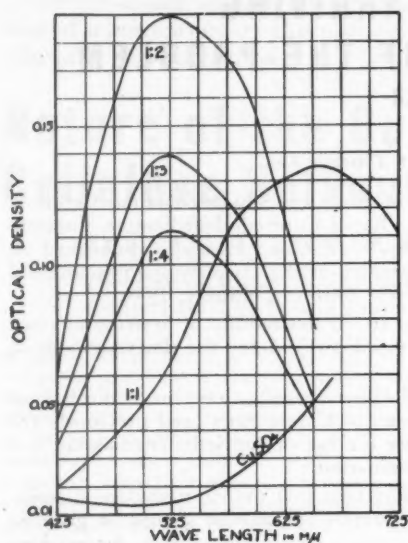
¹Hatch, R. S., *Pacific Pulp & Paper Ind.*, 16, No. 10: 13-17 (1942).

EDITOR'S NOTE—The TAPPI viscosity subcommittee headed by Raymond S. Hatch, director of research, Pulp Division, Weyerhaeuser Timber Co., is aggressively seeking to arrive at a uniform method among manufacturers of cellulose for testing viscosity.

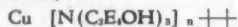
Fritz Straus, who is mentioned by Dr. Hatch in the above introductory article, died in 1942. He was research director at Ecusta Paper Corp., Pisgah Forest, North Carolina, manufacturers of cigaret papers.

Dr. Straus and R. M. Levy, his former assistant and successor, determined the method of preparing cupriethylenediamine cellulose solvent and adopted a capillary viscosimeter. Dr. Hatch, in his studies, adopted a falling ball viscosimeter. Both the Ecusta and Weyerhaeuser Timber Co. research and technical executives are agreed final determination can be achieved through cooperative effort once cupriethylenediamine is recognized as a more desirable solvent than cuprammonium solutions.

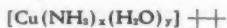
FIGURE 1



properties of some complex copper-amine compounds have presented evidence for the existence of copper-triethanolamine complexes with the general formula,



where n equals 1, 2 and 3. Their results also indicate the possibility of a series of complex ions having the general formula,



where x has values from 1 to 6 and $y = 6 - x$, for each value of x . They conclude from their studies that the cupric ion in aqueous solution has 6 as its coordination number, satisfied by solvation until a compound containing amine nitrogen is added to the solution, whereupon there is a displacement of water molecules from the sphere of influence of the ion with subsequent replacement by amine nitrogen.

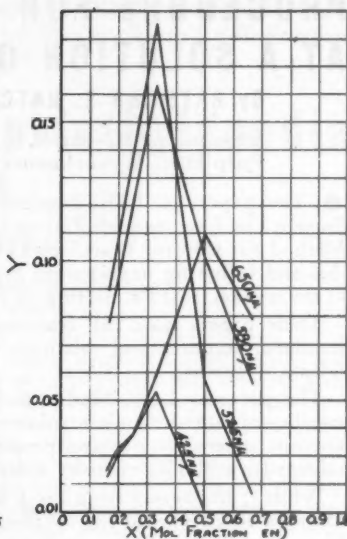
Preparation of the Solid Cupri-ethylene Diamine Complexes

● It was found that the cupri-diethylenediamine sulphate could be prepared by addition of concentrated solutions of ethylene-diamine to copper sulphate in the molar ratio of 2:1. The salt crystallized out as blue-violet plates. The 1:1 compound could be prepared in a similar manner and formed light blue crystals. These compounds were purified by fractional crystallization from warm water.

It was observed that if the 2:1 compound was allowed to stand in a desiccator over ethylenediamine the ratio of amine to copper gradually approached the value of 3:1. This compound was presumably $(\text{Cu en})_3\text{SO}_4$. It was found that the 3:1 compound was quite unstable in water and reverted to the 2:1 form with the liberation of free ethylenediamine. This can be shown by the following experiment:

1 mg. mole of $(\text{Cu en})_2\text{SO}_4$ (0.289 g) and 1 mg. mole of $(\text{Cu en})_3\text{SO}_4$ (0.340 g)

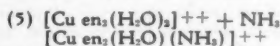
FIGURE 2



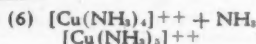
were each dissolved in 500 ml. of distilled water and the transmission at three wave lengths were determined for each solution with the following results:

Wave Length in mμ	% Transmission	
	2:1 Compound	3:1 Compound
650	81.5%	81.0%
525	58.7%	57.2%
425	84.5%	84.25%

The difference in transmission at the three wave lengths for the two compounds show that they are identical, the small difference being due to the free ethylenediamine present. Actually the 3:1 compound is blue whereas the 2:1 compound is violet, however, in dilute solution, the 3:1 complex reverts to the 2:1 complex with liberation of the amine. On the other hand if the two compounds are dissolved in 30% ethylene diamine, instead of a violet solution a blue solution is formed and identical transmissions for the two are obtained, thus showing that both compounds in solution have a molar ratio of amine to copper of 3:1. At constant copper concentration it was observed that below an amine concentration of approximately 30% the 2:1 compound begins to form, presumably due to solvation with the substitution of water for diamine. Hence, it is possible to conclude from these experiments that the 2:1 compound exists in dilute aqueous solution as the di-aquo ion $\text{Cu en}_2(\text{H}_2\text{O})_2^{++}$, and upon the progressive addition of concentrated ethylenediamine the water is replaced by amine to give the complex ion, $(\text{Cu en}_3)^{++}$, in agreement with the work of Cole et al. Rosenblatt (12) has shown that the water in the above complex can be substituted by ammonia thus:

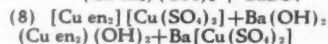
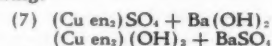


and also—



Stackelberg and Freyhold (13) have also deduced the existence of copper-ammonia complexes with molar ratios of ammonia to copper of 2 to 5 by a study of these solutions with the polarograph.

The compound containing copper and diamine in the ratio of unity is peculiar. It apparently does not exist as the simple ion, $(\text{Cu en})^{++}$ or $(\text{Cu en}(\text{H}_2\text{O})_4)^{++}$. On the addition of barium hydroxide to 1 mole of this compound there is precipitated a compound which contains one mole of barium, two moles of sulphate and one mole of copper. Repeating this same experiment with the 2:1 and 3:1 compound, it was found that barium sulphate was the only reaction product. This would indicate the following:



The existence of the dimeric compound given above was also reported by Chattaway and Drew (2) who determined its presence by the various chloroplatinates that could be formed. From the analysis of the 1:1 compound it was impossible to decide whether it contained 2, 4, or 6 molecules of water.

Electrometric Studies

● A series of potentiometric titrations were made using a Leeds and Northrup precision pH meter with shielded extended leads and the customary glass and calomel electrodes. These titration curves are given in Figures 3 and 4. Figure 3 shows a portion of the curves obtained in the titration of an ethylene-diamine solution saturated with copper hydroxide and the same solution when an excess of ethylenediamine is present. The final break in the curves given show that the decomposition of the complex is complete at a pH of approximately 3.5 (not shown). The curve where an excess of ethylenediamine is present shows two additional steps which represent the neutralization of the free ethylenediamine. It may be mentioned here that these steps are not noticeable when only a small excess of ethylenediamine is present in dilute solution.

The lower curve in Figure 3 represents the electrometric titration of the diamine saturated with copper hydroxide. The total volume of acid required to completely neutralize and decompose the complex amounted to 57.5 ml. of 1 N H_2SO_4 . The amount of acid required to neutralize the hydroxyl groups (first break) amounted to 18.5 ml. In the upper curve the amount of diamine added was equivalent to 18.0 ml. of 1 N H_2SO_4 , and the total acid required for the complete neutralization of the complex was 75.5 ml. which checks with the original titration. The two additional steps in upper curve each required 7.75 ml. of acid. Hence, 2.5 ml. acid, equivalent to ethylenediamine is unaccounted for; however, this would be accounted for if the ratio of the total copper present to diamine is less than 1:2 and the equilibrium is represented by:

A Neat Package

Today, when the "carriage trade" may be more accurately described as the "carry trade", attractive boxes are a must.

As color is frequently the only decoration, special care must be taken in dyeing the box-board.

H & M Pheno Black SGN Conc. is used extensively by board mills for producing the popular level grays and blacks and the soft, warm colors so desirable in box-making.

In the beater, on all types of fiber, Pheno Black SGN Conc. finds universal acceptance because of its direct dyeing action and its high degree of fastness to light, bleeding and rubbing.

Heller & Merz Department

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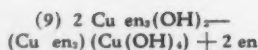
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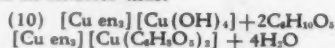
If this is the case, the ratio of diamine to copper present as determined from these curves was found to be approximately 1.80. The determination of copper by precipitation with salicylaldoxime according to Ephraim(4), and the determination of the amine by difference, gives a ratio of 1.89 for the same solution. From numerous tests on cupriethylenediamine solutions saturated with copper, it was finally decided that the ratio of total copper to diamine is dependent on concentration.

Figure 4 shows a potentiometric titration of a concentrated solution of copper saturated diamine approximately 1 N in copper, titrated with 6N sulphuric acid. The two small breaks at the right are presumably due to the free ethylenediamine present in saturated solutions.

Nature of the Reaction with Cellulose

● An equilibrium as represented by equation (9) would explain the fact that an increase in conductivity takes place on the addition of the diamine, and on the addition of a strong base, such as sodium or potassium hydroxide, the equilibrium is shifted to the right; hence, more cupric hydroxide could be put in solution according to experimental observations.

This type of an equilibrium would also explain the dissolution of cellulose to form a complex compound in the form Cu-en-cellulose thus:



where the ratio of copper, cellulose, and on in the complex is 1:1:1.

It also explains the fact that cellulose

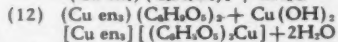
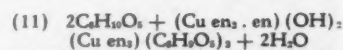
would be precipitated if an excess of diamine were added. The addition of sodium hydroxide would thus favor the formation of the compound $[\text{Cu en}_2][\text{Cu}(\text{OH})_2]$ and thus increase the solubility of cellulose. If, however, a large excess of sodium hydroxide is added the cellulose is precipitated as the sodium salt, the cupri-ethylenediamine salt being represented in equation (10) in accordance with the observations of Traube, Hess, and Jolley.

In the cuprammonium hydroxide system, as we pointed out by Jolley, the molar ratio of ammonia to cupric hydroxide in saturated solutions depends on the concentration of ammonia, but is never much below 50, and this, of course, is far in excess of the simple stoichiometric proportions demanded by the complex, $\text{Cu}(\text{NH}_3)_4(\text{OH})_2$. According to Traube's theory when cellulose is dissolved in this cuprammonium solvent eight moles of ammonia should be set free. However, both Jolley and Berl and Innes (1) found it impossible to detect this free ammonia by two different means. The reason for this may have been due to the fact that either, their methods of analysis were not sensitive enough, or that no ammonia was set free.

It appears very strange that such great apparent differences should exist as to the mechanism of the reaction between cellulose and cupriethylenediamine on one hand, and cuprammonium hydroxide on the other. These two complex solvents form similar types of compounds in the absence of cellulose as shown by Cole and the present authors; hence, it is peculiar that their reaction mechanisms with cellulose should be so different. There is, however, one important feature that apparently has been completely overlooked by all previous investigators in this field. This is the reaction between cellulose and cupriethylenediamine solutions where the ratio of diamine to copper is very high, approaching that of the cuprammonium system.

It was found that cellulose could be dissolved in a solution 0.25 M in copper and containing approximately 600 grams per liter of ethylenediamine. The molar ratio of diamine to copper in this system is approximately 40. Dilution with water of such a solution containing cellulose causes its ultimate precipitation just as it does in the corresponding cuprammonium solution. This fact brings harmony into the two systems. It is conceivable that if low ratios of ammonia to copper could exist a similar reaction to that taking place in copper saturated ethylenediamine solutions would occur.

Stam (14) has shown from ultracentrifuge experiments that the normal type of cuprammonium solvent contains colloidal dispersed cupric hydroxide. This thus affords us a mechanism for the dissolution of cellulose in cuprammonium and cupri-ethylenediamine solutions containing a large excess of the diamine. The proposed mechanism is given as follows:



A similar mechanism for the cuprammonium system can be given where the active solvent is $\text{Cu}(\text{NH}_3)_4(\text{OH})_2$ as proposed by Cole et al.

The above equations representing the mechanism for the dissolution of cellulose in cupriethylenediamine are similar to those proposed by Jolley and Hess for the dissolution of cellulose in sodium hydroxide, i. e., the formation of a salt and the precipitation as the sodium salt of a cupri-cellulose anion on the addition of cupric hydroxide, the soluble cupri-tri-ethylenediamine salt being represented as the reaction product of equation (12) above.

The addition of the diamine or of ammonia in the corresponding system would not affect the equilibria as shown above in the sense of cellulose precipitation. The increase in concentration of diamine in the cupriethylenediamine-cellulose system probably increases the amount of $(\text{Cu en}_2)^{++}$ ion according to similar observations by Stackelberg and Freyhold. This would increase the solvent power of the solution. When cellulose is dissolved in such a solvent the cupric hydroxide bound in the complex can be replaced by the dissolution of additional cupric hydroxide, thus allowing a further quantity of cellulose to be dissolved in agreement with experimental fact.

Conclusions

A study of the experimental results and discussion presented in this paper, together with a knowledge of previous experimental investigations appear to justify the following conclusions:

- 1) The dissolution of cellulose in cupri-amine bases is due to the formation of a complex copper-cellulose anion.
- 2) The active component responsible for the dissolution of cellulose in copper-saturated cupriethylenediamine is most probably the dimeric compound, $[\text{Cu en}_2][\text{Cu}(\text{OH})_2]$, or more similar solvated compound.
- 3) The active components responsible for the dissolution of cellulose in the copper-diamine solution containing a large excess of ethylenediamine may be $(\text{Cu en}_2)(\text{OH})_2$ and $\text{Cu}(\text{OH})_2$. The similarity of the blue color of the two active diamine solvents indicates, at least superficially, that some form of cupric hydroxide may be responsible for the cellulose-complex formation, and hence its dissolution. This is in accord with the nature of the compounds proposed. The blue-violet cupri-ethylene-diamine compound is not a solvent for cellulose.
- 4) The ratio of total diamine to total copper in saturated solutions is probably less than 2:1 which indicates that both the cupri-mono-amine and cupri-di-amine are present. This ratio and the equilibrium between the mono and di compounds are dependent on concentration, and until more refined methods of analyses are made

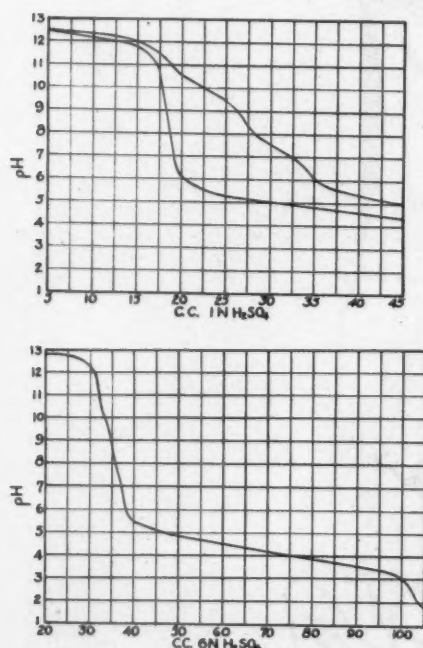


FIGURE 3 (Above) and FIGURE 4 (Below)

BEAR BRAND



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Ammonia

Caustic Soda

Zinc Hydrosulphite

Chlorine

Sulphur Dioxide

**GREAT WESTERN DIVISION
THE DOW CHEMICAL COMPANY**

Seattle

SAN FRANCISCO, CALIFORNIA

Los Angeles



CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY

available the exact nature of these ratios and equilibrium constants cannot be accurately determined.

- 5) The similarity between the cupriethylenediamine system and the cuprammonium system has been brought to light and in view of the experimental results obtained, the two systems may be considered similar in all respects. The differences that previously existed were due to the fact that only a partial investigation had been made. The only difference in the two systems is the difference in the stability of the two complexes. According to Cole and his co-workers, the diamine forms a much more stable complex due to the bidentate linkage.
- 6) Copper appears to retain a coordina-

tion number of 4 in its complex formations, however, it appears probable that an additional two groups may be added to the complex in the form of loosely bound constituents, similar to water of crystallization, giving copper an apparent coordination number of 6.

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A Rapid Cupriethylenediamine Viscosity Method for Control Work

By R. M. LEVY, P. MUFFAT and W. D. HARRISON

Director of Research, Research Chemist and Technical Director, respectively, of Ecusta Paper Corp.

● Recently Straus and Levy (8) presented a technique for the determination of the disperse viscosity of cellulose using cupriethylenediamine as the solvent. More recently Hatch (6) and his co-workers have made some modifications of the original cupriethylenediamine method, and have developed a precise method which compares favorably with the American Chemical Society precise method (1) for the cuprammonium disperse viscosity of cellulose. They have also proposed a rapid technique using the cupriethylenediamine solvent.

In the past many rapid methods of viscosity determination have been proposed (2, 3, 4, 7). The majority of all these methods use the relatively unstable cuprammonium solvent.

The most serious disadvantage in the use of all previous procedures for a rapid viscosity determination is the obtaining of a known sample weight in a relatively short period of time, especially if wet samples are received. In all the proposed procedures for a rapid viscosity determination, some rapid means of drying is usually necessary. In general, all of these procedures consist of passing a blast of warm air through the moist pulp, or the use of some initial treatment which usually consists of an acetone wash previous to the drying operation. This drying procedure is quite irksome and presents many experimental difficulties. First, the rapid drying may in some instances cause a drop in viscosity due to degradation, or the sample may not always come out with a constant moisture content. Also, when acetone or other low boiling water solvent is used it must be recovered by distillation. This recovery of the solvent is laborious, and all in all it is an expensive proposition. Due to the fact that the samples come from the drier in almost a bone dry condition, they cannot

be disintegrated because in doing so changes in the moisture content would take place on exposure to the atmosphere. These samples are quite dry and therefore they do not readily dissolve, hence, two solutions for dissolving must be resorted to; one for wetting and swelling, and the other for completion of the dissolution (6, 7). Usually the sample is removed from the drier and quickly placed in a weighing bottle; the amount of solvent required is then calculated from the amount of pulp taken. This means that a variable amount of solvent must be used for each sample. When relatively unskilled help is available, which is usually the case in pulp and paper mill control, the control methods should be as foolproof as possible, with a minimum amount of careful manipulation and handling.

Proposed Rapid Viscosity Technique for Mill Control

● The present authors propose a method whereby the moist pulp sample is used directly without drying. The relative advantages of such a method can be readily appreciated.

Before proceeding with a complete description of the method and apparatus used, a brief account of the method is given in the following:

The technique consists of first subjecting the wet pulp to a wet disintegration. The wet disintegrated pulp is then measured volumetrically into a dissolving tube and an equal volume of double strength (1.0 M in copper) cupriethylenediamine solution is added to the pulp suspension. The pulp is stirred for five minutes and the viscosity determined with a capillary viscometer. An aliquot of the pulp suspension is also taken volumetrically, fil-

tered on a buchner, dried on a steam cylinder, and finally weighed in a conventional type of heated pulp balance. The viscosity is then corrected to a standard weight from a set of simple tables provided. The entire test from start to finish requires approximately 20 minutes. This test lends itself readily to "mass production," is simple and inexpensive to carry out (unskilled workers have no trouble with the whole procedure) and the results obtained are reproducible within 1% or better.

The equipment used in carrying out this rapid viscosity test is illustrated in Figures 1-5. Figure 1 shows the wet disintegrator set up for operation. In Figure 2 a diagrammatic sketch of the disintegrator is given which is self-explanatory. Figure 3 illustrates by photograph a "battery-type" stirrer that has been previously described in another paper (8). Figure 4 shows the type of measuring pipette used for taking a sample of pulp for dissolving as well as the aliquot to be dried. Figure 5 illustrates the capillary viscometer and method of cleaning same. The solvent and its method of preparation has been described in a previous communication (8). For the purpose at hand the solvent is a solution of cupriethylenediamine saturated with cupric hydroxide and 1.0 M in copper.

The detailed procedure used is given in the following:

A sample of wet lap pulp is put through an ordinary hand clothes wringer and under these conditions it was found that the equivalent dry weight was approximately 30 to 35% bone dry. From 12 to 15 grams of the moist pulp is then weighed out to the nearest 0.5 gram, picked apart to give a crude shredded appearance and then placed in the disintegrator with 500 ml. of

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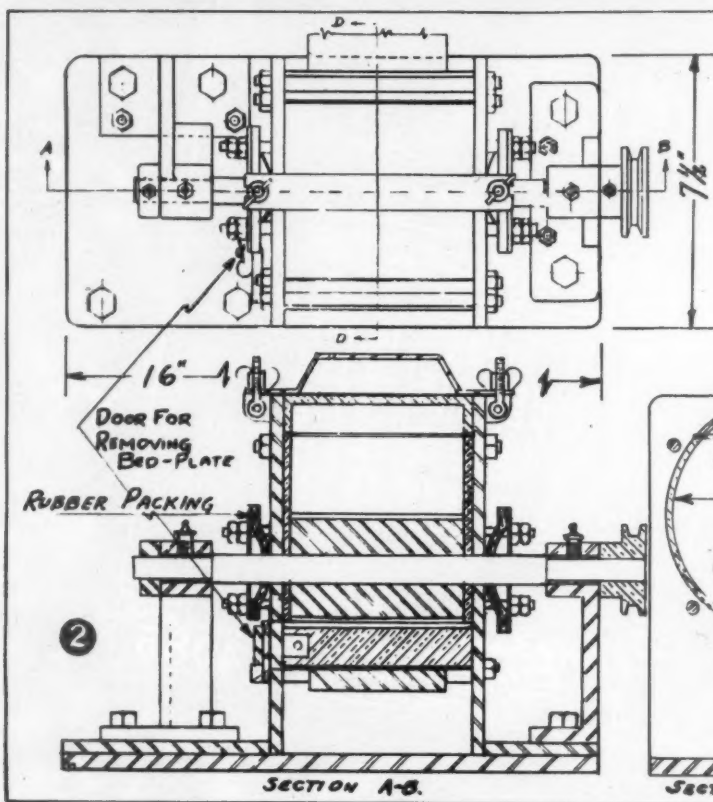
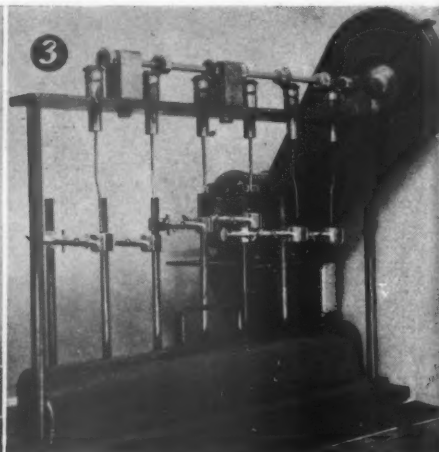
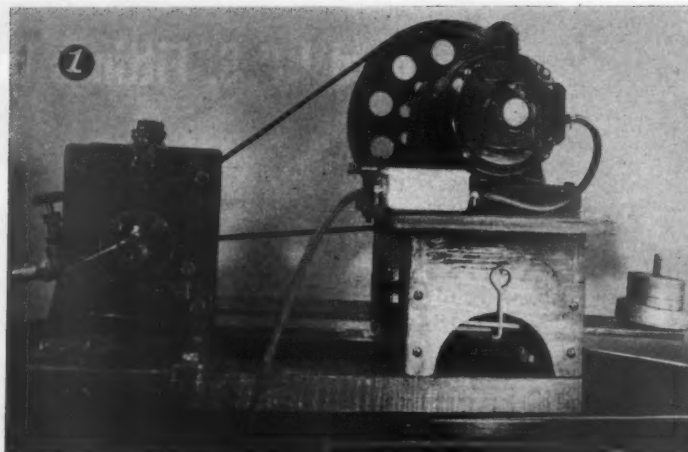


FIG. 1 — WET DISINTEGRATOR SET UP FOR OPERATION.

FIG. 2 — DIAGRAM SHOWING ASSEMBLY OF WET DISINTEGRATOR.

FIG. 3 — BATTERY STIRRER FOR DISSOLVING PULP SAMPLES.

water. The cover is then bolted in place and the motor started. The disintegrator is allowed to act on the pulp for five minutes with a fifteen-pound weight on the bed-plate. At the end of this disintegrating period the pulp suspension is drained from the disintegrator through the drain line provided for this purpose (not shown in Figure 2). This pulp suspension is ground exceedingly fine and is free of shives and knots. The pulp suspension is then drawn up in the pipette shown in Figure 4 by means of a water aspirator pump, care being taken that the pulp is agitated previous to sampling. Two such pipettes are required, one calibrated to deliver 100 ml. and another calibrated to deliver 25 ml. The

sample taken in the smaller pipette is drained into a dissolving tube the size of a common 50 ml. graduate. The solvent is then added from a storage bottle equipped with a 25 ml. automatic pipette as described in a previous paper (8), and the sample is dissolved in 5 minutes on the battery stirrer shown in Figure 3. The 100 ml. sample is drained directly onto the brass muller funnel holding a 7 1/2 cm. filter paper. After the pad has been sucked as dry as possible, it is removed and the filter paper peeled off. The pulp in this condition is well "hydrated" and quite "rubbery" and in this state can be removed from the paper with little trouble. The pad is then placed on a heated metal steam cylinder

(50 lbs. per square inch pressure inside), equipped with a screen holder for keeping the pad flat while it dries. While the pad is drying, the operator can now remove the solution from the stirrer and determine the viscosity at 25°C according to previous directions (8). When the viscosity has been determined the pad is removed from the drier and weighed to the nearest milligram in a conventional type of heated balance. From this viscosity value and the dry weight of the pad the viscosity at 0.5% concentration can be found in a table provided.

A table of corrections is made up as follows:

It has been found that the Farrow and Neale Equation in the form,

(Continued on page 44)

"baby" your felts

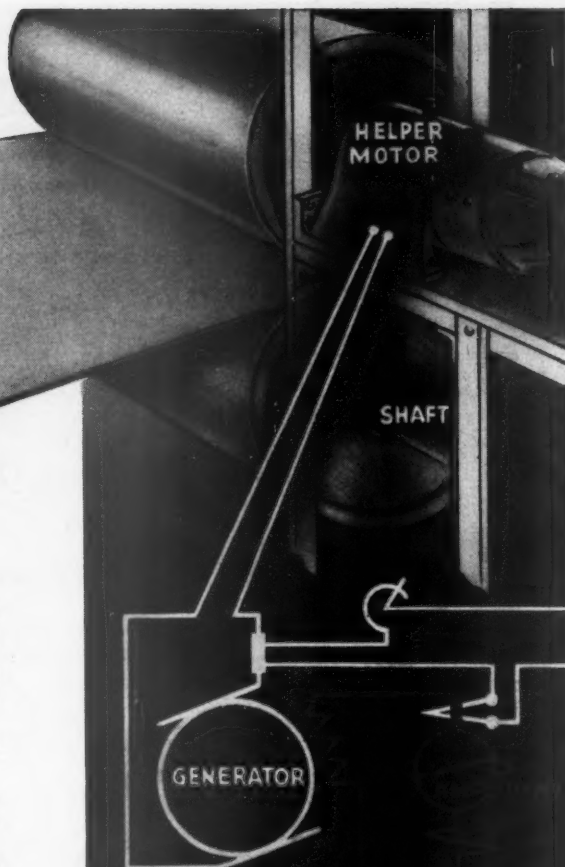
Simple, new, save-the-load control system, making use of the G-E amplidyne, keeps motor torque "on the beam" regardless of machine speed.

NEW, wide-range flexibility and simplicity have now been added to the service-proved advantages of G-E auxiliary drives for paper machines. Felts are more fully protected from strain and friction, draw is more accurately regulated, acceleration and deceleration are smoothly accomplished.

This basic improvement in helper-drive operation results from application of the instantly responsive G-E amplidyne to load regulation and speed control. Helper motors on any roll or group of rolls will furnish the torque to take all the drive load off the felts, regardless of operating speeds or speed changes. Or they can be controlled in accordance with the suction-box vacuum or other variables so as to counterbalance changes in load. They are equally applicable to mechanically driven or electrically driven machines, from board to tissue, *old or new*.

The simplicity of the new control system backs up the well-proved dependability of G-E drive motors and generators in paper-mill service.

Our application engineering combines the most advanced electrical methods with a broad background of practical experience on sectional drives, wet-end drives, and other paper-mill electrification problems. *General Electric Co., Schenectady 5, N. Y.*



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By means of amplidyne control, a "helper" motor driving the top roll can relieve the friction load on the felts and wet sheet, without adding to the complexity of speed control. Motor torque is maintained at constant level, thus offsetting friction load, regardless of operating speed.



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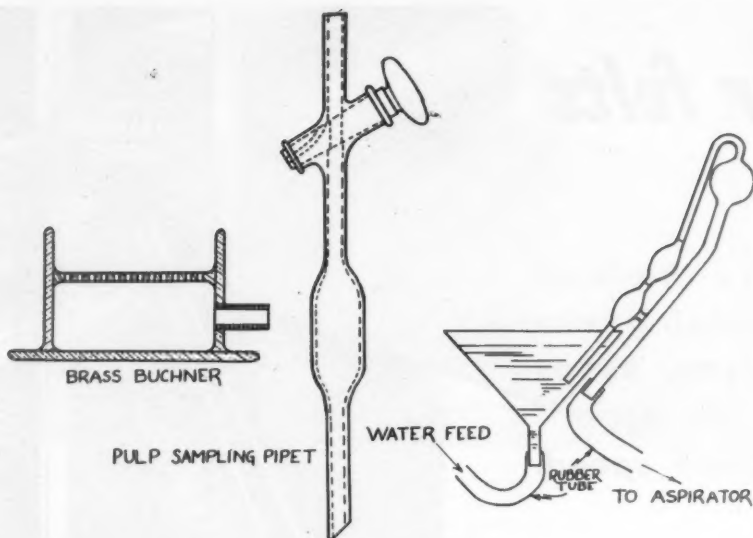


FIGURE 4 (Left) and FIGURE 5.

$$\frac{1}{C} + 0.3 = S \left(\frac{1}{\log V_r} - 0.05 \right)$$

where C = concentration in grams per 100 ml.
 V_r = relative viscosity.
 S = slope of the curve.

satisfactory enables one to calculate the change in viscosity due to changes in cellulose concentration for 0.5 M cupriethylenediamine solutions in the range studied (5, 8).

If we let $\frac{1}{C} + 0.3 = y$ and $\left(\frac{1}{\log V_r} - 0.05 \right) = x$
 Then for any measurement:
 $y = SX$

Now if y' be such that C is 0.5 gram (0.5%) then X' will be the viscosity function of any sample at 0.5% concentration. To obtain the viscosity func-

tion X' at 0.5% concentration, we use the following relationships:

$$y' = SX'$$

$$y = SX$$

and since S is the same for any given sample of pulp, we have

$$y' = \left(\frac{y}{X} \right) X'$$

or

$$\frac{y'}{y} X = X'$$

$$\text{or if we let } \frac{y'}{y} = Y$$

$$\text{then } YX = X'$$

We can now construct two tables thus:
 Weight of bone dry pulp per 100 ml. Y Viscosity X

(etc.)

Fir-Tex Night Differentials

● Fir-Tex Insulating Board Co. workers at St. Helena, Ore., were granted night shift premiums of 3 cents per hour for the second shift and 5 cents per hour for the third shift by the Regional War Labor Board, Seattle, Wash. The third shift differential applies only for Fir-Tex workers who are members of Local 2752, Northwest Council of Lumber and Sawmill Workers and is to continue only so long as the night shift continues to be eight hours in duration.

Application for a general wage increase was denied.

The decision affects 185 employees.

Bellingham Picnic

● The engineering, laboratory and supervisory staff of the Puget Sound Pulp & Timber Co. spent an evening of swimming, baseball and eating at a picnic held at Whatcom Falls Park in Bellingham, Wash., the night of Sept. 6. Over seventy attended. The baseball game had to be called in darkness with the score, eleven all, suggesting that pitching of Fred Gilmore and Sid Collier was not exactly airtight.



RALPH M. HOFFMAN, President, Link-Belt Company, Pacific Division, announces the promotion of FRED A. KOEPF (left) and GEORGE T. LUNDQUIST.

MR. KOEPF, until recently Assistant Manager at Los Angeles, has been advanced to District Manager for northwest Pacific Division territory, with headquarters at Seattle.

MR. LUNDQUIST, until recently assistant to H. V. Eastling, Vice President and Sales Manager, San Francisco, succeeds Mr. Koepf as Assistant Manager at Los Angeles.

in the desired range. Then the weight of the dry pad in grams as determined is located in the table and the corresponding value of Y obtained. From the viscosity as determined, the value of X is found in the table. Then the product of X and Y is obtained and is located in the X column. From this value the corresponding value of the viscosity is read from the chart which gives the actual viscosity at 0.5% concentration.

This method of viscosity determination lends itself readily to pulp and paper mill control. Under the special conditions given, excellent reproducibility in viscosity is possible (1% or better). The short stirring time where only small air surface is exposed causes a negligible change in viscosity. Dilution of the cellulose-cupriethylenediamine with water causes no precipitation of the cellulose as it does in the corresponding cuprammonium system; hence, the capillary viscometers can be readily cleaned with water by the method shown in Figure 5. In this method the several operations can be carried out simultaneously and one operation need not be finished before another is begun. This factor is one that makes for satisfactory control with the least effort and the least number of precautions, an advantage over previous methods of viscosity control. Also, duplicate moistures and viscosities on each disintegrated pulp sample can be made together without prolonging the time over that required for a single determination.

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Monsanto Opens Seattle Sales Branch Office

● Monsanto Chemical Company opened a general sales office at 911 Western Ave., Seattle, Sept. 1 with C. F. Trombley serving as branch manager and representing the company in all lines other than those of its recently-acquired I. F. Laucks properties.

Trombley will report to Ed Schuler, general branch manager, West Coast territory, offices in San Francisco.

Tide Water Associated Co. Executives Promoted

● William F. Humphrey, president of Tide Water Associated Oil Co., has announced appointment of H. D. Haney as assistant vice president. Mr. Haney will continue in his capacity as manager of transportation.

Gardiner Blackman was appointed manager of industrial relations, western division, succeeding C. R. Brown, who assumes additional responsibilities in his capacity as assistant to the president.

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Against the backdrop of war, users and manufacturers of dyestuffs are working together to open new horizons. Problems yield to the ingenuity and skill of men whose vision is not obscured by limitations of previously accepted facts—nor by the inertia of tradition.

Solutions to many difficulties are in the fund of information we've built up. Perhaps through them we can answer some perplexing question of yours. Cooperation now may also lead the way to profitable advance solutions of your postwar dyeing problems. E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Dyestuffs Division, Wilmington 98, Delaware.

BETTER THINGS FOR BETTER LIVING THROUGH CHEMISTRY



Swedish Cellulose Stocks Total 600,000 Tons

● Stocks of cellulose in Sweden amount at present to about 600,000 tons, which means warehouses are filled almost to capacity, according to registered agents of the Swedish industry. In the beginning of 1944 the reserves were somewhat more than 400,000 tons. The figures do not include so-called fodder cellulose, which probably total about 100,000 tons. Since the war began one million tons of this emergency feed have been produced for home consumption.

During 1944 around 200,000 tons of cellulose, as the increase in stocks shows, have been manufactured for postwar consumption.

In 1943 the Swedish pulp mills used only 35 per cent of their capacity, and about one-third of this small production was cellulose feed. In the Swedish-German trade treaty that was signed in January, 1944, the Swedish export quota for wood pulp was fixed at 200,000 tons, which was less than a tenth of the normal Swedish exports of cellulose before the war. There was, moreover, reason to doubt that even this small quantity would actually be delivered.

(In last month's issue of *Pacific Pulp & Paper Industry*, a letter from Secretary of State Hull was published, disclosing that Sweden's pulp shipments to Germany were curtailed by agreement with the United States.)

In normal times cellulose is Sweden's leading export article. In 1939 it accounted for 18.3 per cent of the value of Swedish exports, iron ore holding second place with 12.3 and lumber third place with 7 per cent. The total quantity of cellulose exported in that year was 2,025,000 tons, of which 1,217,000 tons were sulphite pulp and 808,000 tons sulphate. No less than 833,000 tons of pulp (430,000 tons sulphite and 403,000 tons sulphate), or more than 40 per cent of the whole quantity exported, were shipped to the United States. The same country bought 70 per cent of the Swedish production of bleached sulphate and nearly 50 per cent of the unbleached sulphate. For sulphite the corresponding figures were 19 and 45 per cent. Next in importance as a consumer of Swedish cellulose came Great Britain, which bought 440,000 tons. The United Kingdom, however, also bought large quantities of Swedish mechanical pulp, taking 441,000 tons, while Sweden's total exports of such pulp were 508,000 tons.

Johnston of Pusey & Jones Visits Coast Mills

● R. S. Johnston, director of sales, machinery division, Pusey and Jones Corp., Wilmington, Del., made his first tour of the Pacific Coast pulp and paper industry since U. S. entry in the war during late August and early September.

Mr. Johnston has been serving as chairman of the Pusey and Jones research and development committee which has made a study of a number of improvements for postwar paper making machinery. The Pusey-Jones Flow Spreader, an important development before the war for uniform flow mechanism at wet ends of machines, is going to be an important new activity with relaxation of that company's heavy shipbuilding war work schedule.



HAROLD OLSON, former managing editor of the *Aberdeen (Wash.) World*, who is now the western representative of American Forest Products Industries, Inc., public relations organization for a number of large pulp and paper and lumbering interests. Headquarters of this organization is at 1319 18th St. N. W., Washington, D. C. Mr. OLSON's headquarters will be 519 Yeon Bldg., Portland, Ore. He is a veteran of World War I and a graduate of Washington State College.

Waste Paper Drives Need More Continuity, Better Management

● Collection of waste paper in the Southern California area, inspired by citizen response and enthusiasm, has proved somewhat of a "Frankenstein Monster" to paper mills, according to one prominent mill executive.

Drives for waste paper, conducted by the WPB, in cooperation with mills, civic and fraternal organizations have proved so productive as to literally swamp the mills, causing congestion in available storage facilities with resultant increased labor needs for handling and presenting mill personnel with problems difficult to solve.

The trouble arises from methods employed to "get out" the waste paper—with various agencies putting on drives and arousing enthusiasm which eventually sees collection depots, such as churches, Boy Scout headquarters, service stations, etc., flooded with contributions.

The mountains of waste paper piling up in many widely scattered places become more than transportation facilities can cope with; then the bundles lie around while the paper spoils; bundles are not adequately tied, and the whole task becomes one of handling and re-handling.

Last January the response from the Southern California area was so tremendous the mills were totally unable to use collections in orderly process and WPB officials began the making of

Canadian Log Quota For U. S. Is Assured

● British Columbia will ship the full allotment of 32,500,000 feet of hemlock pulpwood to United States mills this year, and this is in addition to the considerable traffic in chips being regularly exported, according to Assistant Timber Controller D. D. Rosenberry at Vancouver, B. C.

There had been reports to the effect that British Columbia would probably fall short of the export allotment this year owing to decline in production, threatened shortage in British Columbia pulp and paper mills and other causes, but the Timber Control contends that by the end of the year the Canadian undertaking will be fully met.

Mr. Rosenberry stated that he did not have the complete figures, but it was indicated that the volume of chipped pulpwood, most if it shipped from Fraser River mills by rail to Bellingham or Everett, Wash., and by barge from the west coast of Vancouver Island, would be roughly the equivalent of the pulp logs.

In other words, some 60,000,000 feet of hemlock or the equivalent thereof will be shipped from British Columbia to Washington state pulp mills this year, he said. What the arrangement may be next year time alone will tell. No one in the Timber Control organization is prepared now to hazard even a guess.

This year's allocation to United States mills was purely a "token" and did not attempt to represent the requirements of that market.

briquets, etc., from the waste paper.

"It should not be misconstrued that we are not grateful for such a generous response on the part of the public," said the executive. "Without it we should not have been able to carry on at all. We need the waste paper; in fact, must have it."

However, what the mill operators would like to see is a continuous flow of waste papers, and drives so conducted so as to assure this, and not the tremendous concentrations which result from "one-shot" campaigns which bring in the contributions all at one time.

ANPA Manager Sees Adequate Newsprint Supply

● The Hawley Pulp & Paper Co., Oregon City, Ore., was visited August 10 by Cranston Williams, general manager of the American Newspaper Publishers' Association, accompanied by his wife and two sons. He was accompanied by Jack Smith, president of Hawley Pulp & Paper Company, Portland, Ore., and S. R. Winch, business manager of the Portland Journal, Portland.

Mr. Williams two days later told a luncheon meeting of Northwest publishers in Portland that fears of further reduction of newsprint during the fourth quarter have been dispelled. He said Canada "hopes to exceed by a few thousand tons" the 200,000 tons of newsprint shipped monthly to this country.



STANDARD ENGINEERS NOTEBOOK

Compounded Steam Cylinder Oils form adherent emulsions

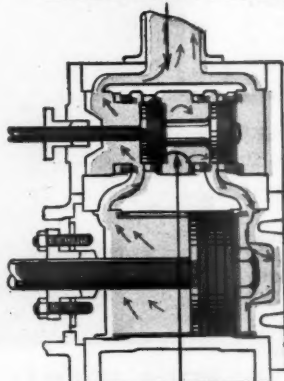
The problems of cylinder lubrication in steam engines have been solved for many operators by compounded Calol Cylinder Oils.

Calol Cylinder Oil 125PX. A medium viscosity oil of paraffinic base stock, recommended for high-speed or heavily loaded engines where steam pressures do not exceed 150 pounds gauge and steam temperatures 400°F.

Calol Cylinder Oil 135FX. Medium viscosity, filtered oil that will separate rapidly from water. For steam pressures up to 160 pounds gauge and steam temperatures not to exceed 375°F.

Calol Cylinder Oil 155PX. Medium-high viscosity, wide range, cylinder oil of paraffinic stocks, for normal wet-steam and moderate super-heat conditions. Steam pressures up to 225 pounds gauge; steam temperatures up to 550°F.

EXHAUST STEAM PASSAGE

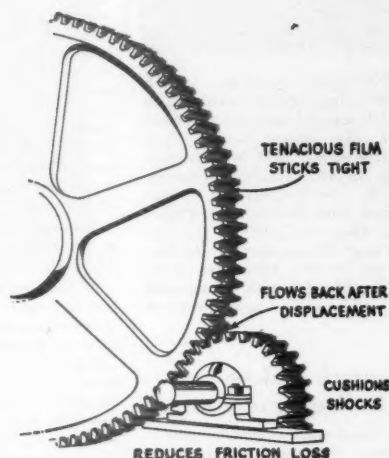


PRESSURES RANGE FROM APPROX. 75 TO 225 LBS.

WHATEVER THE CONDITION, THERE IS A PROPER, ECONOMICAL CALOL CYLINDER OIL.

Adhesive greases withstand heavy gear loads

Open gears may be thoroughly and successfully lubricated with Calol Pinion Greases.



Although Calol Pinion Greases have a very high viscosity, they remain fluid enough to return to gear teeth after the sliding action of the teeth has pushed them away. Their adhesive qualities keep a tenacious film on the teeth at all times. This tough film withstands pressures, cushions shocks and reduces frictional losses.

The lightest grade, Calol Pinion Grease-0, is also recommended for grease-lubricated incased gears, particularly where climatic temperatures are low.

Calol Pinion Greases are made in four grades: 0, 1, 2, 5. The heavier grades are increasingly more adhesive and in some cases require heating for correct application.

Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert help—make your maintenance job easier. Call your Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

STANDARD OF CALIFORNIA



W. D. McWATERS, Manager, Portland, Ore., Division, Zellerbach Paper Co. since 1913, has of his own volition handed over the reins to his son, Walter R. McWaters, and will henceforth act only in an advisory capacity. "MAC," as he is known to many friends, started with Zellerbach Paper Co. in 1906, when he arrived on the West Coast from Minneapolis. During all of the years he has had just three hobbies: his family, his golf game and his business, and business took most of his time.

Allen Newmark Takes New Post In San Francisco

● Allen J. Newmark, formerly printing paper sales manager of the Los Angeles division of the Zellerbach Paper Co., has moved to San Francisco to be assistant to Victor E. Hecht, vice president, in the headquarters administrative department.

Mr. Newmark's activities will cover all phases of printing paper merchandising.

He is succeeded in the Los Angeles division by E. J. (Ed) Hansen, who is well known to the Southern California trade.

First Colton Grandson

Lawrence Colton Levy is the newcomer's name and he's the first grandson of L. A. Colton, vice president, Zellerbach Paper Co., San Francisco. Proud parents are Mr. and Mrs. Willard S. Levy, San Francisco; Mrs. Levy being the former Miss Marian Colton.

Doherty Heads War Chest

Leland J. Doherty, manager of the Sacramento division of the Zellerbach Paper Co., who was recently made a member of the Past Presidents' Society of the Rotary International, is now heading War Chest activities in Sacramento.

Promotion Delayed

● Ensign Frederick D. McGillicuddy, U. S. Navy, formerly in the Hoquiam, Wash., personnel department of Rayonier Incorporated, ran into tough luck when his graduation from the indoctrination school, University of Arizona, was postponed to Sept. 12 by an operation for appendicitis.

NO LUNDBERG ARTICLE THIS MONTH

There was no contribution this month from A. H. Lundberg to his series of articles on "Acid Making in the Sulphite Industry" because he was traveling.

Canadian Celanese To Produce New Plastics

● Canadian Celanese, Ltd., will be in production of new plastic and other chemical products before the end of this year, Doctor Camille Dreyfus, president, states.

Although an affiliated company, Celanese Corp. of America, is one of the largest producers of plastic products from woodpulp in the United States, Canadian Celanese hitherto has been engaged solely in the production of yarn and fabrics, and this will be the first output by the Canadian company of chemical products other than synthetic textiles.

At the annual meeting of Canadian Celanese, Dr. Dreyfus revealed that the company finally has obtained government sanction and permits for construction this year of new plant facilities at total cost of 2½ million dollars. This initial construction, Dr. Dreyfus states, will be the start in a plant construction program aimed to provide facilities for the manufacture of a new yarn, plastic products and other chemical materials. Canadian wood pulp, among other materials, will be utilized.

Stewart Construction Co., Sherbrooke, is awarded a general contract at about \$500,000 for buildings.

It was indicated that earnings for the current year may not exceed the \$1.73 a share reported on the common for 1943, due to present tax regulation, but Dr. Dreyfus expected that earnings in 1945, after completion of plant additions, will be more satisfactory. Present dividend rate on the common stock is \$2.00 a share. Dr. Dreyfus made no mention of dividend policy, but a year ago he pointed out that the company had a substantial surplus and for a time dividends could be paid from this surplus.

It is understood that the plant additions will permit production of a number of newly developed plastic products, which hitherto have not been made in Canada. Consideration is being given to location of part of future plant facilities at places other than Drummondville where the company's operations hitherto have been centered.

The company plans to spend approximately \$5 millions over the next year on plant expansion.

Westler Joins Kimberly-Clark

● H. P. Westler has been appointed sales manager of the Western Division of Kimberly-Clark Corp., with headquarters at 510 West Sixth Street, Los Angeles 14, California.

Mr. Westler started in the paper business with Mr. Ben Newhouse in Minneapolis, then moved to San Francisco to join Blake-Moffitt & Towne, as a salesman, and has been associated with them for a number of years.

Longfibre Bowlers Off Again

The Longfibre Bowling League, an inter-company competition sponsored by the Longview Fibre Co., Longview, Wash., resumed for the winter season September 14. Eight teams are participating, to make it the largest league in Longview. Bill Clark, assistant superintendent of the pulp mill is the league secretary.

John H. Smith Named To Tax Committee

● John H. Smith, president of Hawley Pulp & Paper Co., Oregon City Oregon, has been named by Robert Gaylord, president of the National Association of Manufacturers, as an Oregon member of a newly created taxation committee. The other Oregon member is E. C. Sammons, vice president of the Iron Fireman Manuf. Co.

The newly appointed taxation committee consists of 95 members selected from 42 states and has come into being to consider revision of the tax structure which will be undertaken by Congress.

"Chief" Clark Retires

● Harry S. "Chief" Clark, 71, retired chief engineer of Camas, Wash., division of Crown Zellerbach Corp., ended 35 years with that mill on August 15, at a meeting of fellow employees in the foreman's room held in his honor.

Mr. Clark first went to work at this mill when it was known as the Crown Columbia Paper Co. For 25 years he served as chief engineer in the steam plant, and for a lengthy period in charge of the electrical department as well, until he asked to be relieved in that department by Fred Stevey. Mr. Clark continued his employment in the department.



ERNEST J. LEMLEY, former Night Superintendent at the now defunct Tacoma, Wash., mill of Rayonier Incorporated, and later Safety Engineer at the Port Angeles, Wash., Division, is now the Personnel Manager at Rayonier's Fernandina, Fla., Division. Born in Dallas, Texas, in 1893 of Welsh parents, Mr. Lemley served 13 years in the U. S. Army before entering the pulp industry in 1929 as an acid maker at the Port Angeles mill. His career took him to Tacoma and back to Port Angeles before the Florida appointment.

PARACOL*

WAX EMULSIONS

The only liquid
needed is water



The Paracol* Wax Emulsions pour or pump like water at all mill temperatures. They mix perfectly, offer trouble-free handling in beater, tub, calender or coater. Stable on long storage, they are formulated to break only where and when the wax is needed . . . in the presence of acid or alkali or heat. It's easy to use Paracol whenever paper needs wax.

Your PMC technical representative knows how to obtain the best results with Paracol—through our more than 15 years experience in making emulsions and applying them to paper-making problems. For further information on the use of Paracol emulsions in your operations, use the convenient coupon below.

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CHEMICALS FOR INDUSTRY

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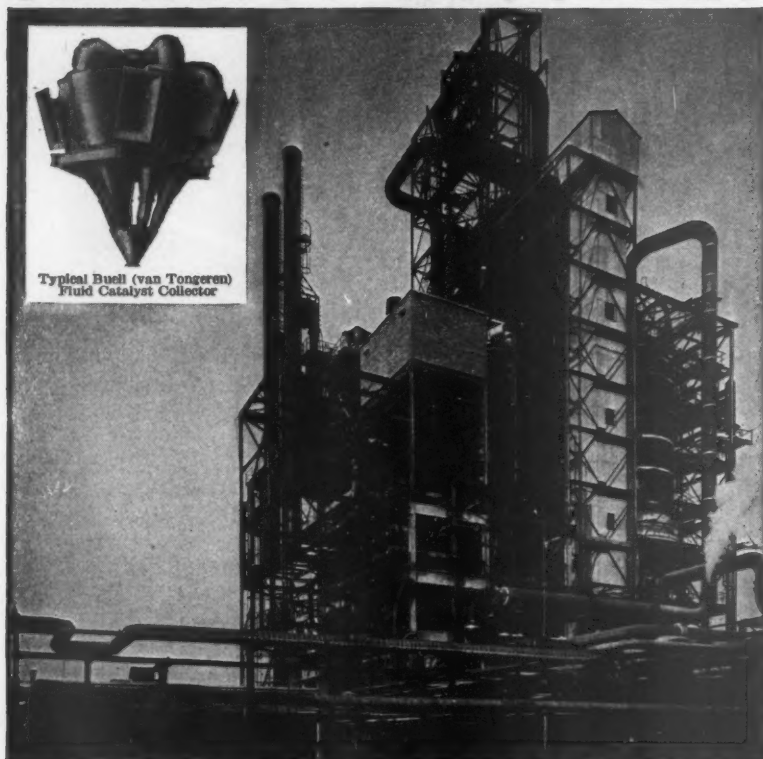


by Hercules Powder Company

● **WHAT HAPPENS HERE?** Paracol is mixing with water like cream in your coffee—hot or cold. The wax particles of Paracol Emulsions are so microscopically small that they disperse quickly and uniformly in water solutions of papermaking materials.

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CATALYST RECOVERY



Fluid catalyst cracking plant for 100-octane gasoline in one of America's largest oil refineries.

Saving the Catalyst in High Octane Gasoline Production

• THE ABOVE ILLUSTRATION shows the plant of a large oil company, which is typical of the catalytic cracking plants used in the making of 100-octane gas. In this plant the fluid cracking process is employed.

An important part of the process is the Buell (van Tongeren) Catalyst Collector. Both the plant and the collector are representative of the type which have been installed by a number of oil companies, making possible the production of tremendous quantities of gasoline required by the war program. Catalytic cracking is but one of the developments which point up the ingenuity and scientific progress of the American oil industry and by which high production of 100-octane gas has been possible.

Further, here is the strongest of indications of Buell's high efficiency and wide application. In designing and building over two-thirds of the nation's fluid cat-cracking capacity . . . The M. W. Kellogg Company has installed Buell catalyst recovery systems throughout.

Again, Buell has demonstrated its ability to solve difficult dust recovery problems.

Write for a copy of the illustrated book — "The van Tongeren System of Industrial Dust Recovery," containing facts about this patented system, interesting alike to engineer and executive.

BUELL ENGINEERING COMPANY, INC.
70 Pine Street, New York 5, N. Y.
Sales Representatives in Principal Cities



DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"

2,000 Vortrap Classifiers Installed Throughout World

To date more than 2,000 Nichols Freeman Vortrap Classifiers have been installed in pulp and paper mills throughout the world, according to F. B. Schilling, vice president of Nichols Engineering & Research Corp. (60 Wall Tower), New York.

The Vortrap, used to help in cleaning paper furnish and to remove pipe scale, grit, etc., from pulp, was described in the July issue of **PACIFIC PULP & PAPER INDUSTRY**. It classifies materials in liquid suspension by centrifugal force.

Heller & Merz Dept. Takes Wider Field

• Products for the paper trade made by the newly formed Pigment Department of the Calco Chemical Division, American Cyanamid Co. will be sold by the Heller & Merz Department.

The Heller & Merz organization, long a leader in this field, is headed by J. H. Loomis, sales manager.

Mr. Loomis stated that Unitane (titanium dioxide) and other products of the Virginia Chemical Corp., whose manufacturing facilities have just been acquired by Calco, also will be sold by his department. The addition of these products will greatly expand the Heller & Merz line.

DuPont Personnel Changes

• Howard J. White and James S. Denham, managers of the rayon division and acetate division, respectively, of E. I. duPont de Nemours & Co., have been appointed to newly-created positions of assistant managers of the rayon department. Mr. White will coordinate operations and technical work, and Mr. Denham will coordinate commercial and sales activities, under direction of B. M. May, assistant general manager of the department.

Frank B. Ridgway was named manager of the rayon division, succeeding Mr. White, and Willis Shackelford succeeded Mr. Denham as manager of the acetate division.

Industrial Engineering Offers Pulp Log Saw

• Industrial Engineering, Ltd., Vancouver manufacturers of power saws, have developed a new type of light-weight mobile sawing equipment especially designed for the cutting of pulp logs. It is called the Beaver.

The "one-man power saw" weighs, when fueled, only 30 pounds. It is a two-cycle, air cooled unit, with a stroke of 1 9-16", bore 1 1/2" and 1 1/4 h. p. The cutting capacity of the bar is 14". The bar gauge is 3-16" and the chain gauge 1/4".

Equipped with sprocket and chain drive, the Beaver saw cuts horizontally or vertically by the simple positioning of carburetor.

New Monsanto Plastics Chief

• Felix N. Williams, production manager, phosphate division, Monsanto Chemical Co., St. Louis, has succeeded the late John C. Brooks as general manager of the company's plastics division at Springfield, Mass., it is announced by Charles Belknap, Monsanto president.

**LYDDON
& COMPANY
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EXPORTERS OF
AMERICAN PULP
TO BRITAIN, SOUTH
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WOOD PULP
WORLD-WIDE
PAPER EXPORTERS

Attention, Inventors

● Ideas of potential value to the war effort are requested by the National Inventors Council of the Department of Commerce, Washington, D. C. This council encourages the public to submit inventions or ideas, and then re-routes these contributions to the proper authorities. The armed forces are, of course, prepared to pay for ideas which may result in saving lives, time or material. They invite ideas which might solve the following inventive problems:

A durable coating suitable for field application to reduce the glare from glass surface.

An optical method of distinguishing the difference between an artificial green and a natural green.

A voice-transmitting gas mask that would permit the wearer's voice to be heard with clarity.

Protection against flame throwers.

Design of life vest that automatically inflates and turns the man on his back when he is thrown overboard by concussion and is unconscious.

Means of controlling fires in fighting tanks for a sufficient period of time to evacuate personnel.

Forest Service Change

● Edward I. Kotok, a veteran of the U. S. Forest Service, has been appointed assistant chief in charge of research, according to Lyle F. Watts, chief. Mr. Kotok, born in Russia in 1888, was reared in New York City, being graduated in science from CCNY and later taking postgraduate work at the U. of Michigan in forestry. He succeeds Clarence L. Forstling, new director of grazing in the Department of Interior.

JAMES ALEX-ANDER, Storekeeper 1st Cl., U. S. Navy, formerly was in the Purchasing Office, Hawley Pulp & Paper Co., Oregon City, Ore. He spent 23 months in the South Pacific.



Packaging In Pacific Areas Licks the Jungle

● A recent 31,000-mile inspection tour of the Central, South and Southwest Pacific areas to find out whether armament, ammunition, etc., were satisfactorily withstanding frequent handling, the long ocean voyage, temporary open storage conditions, and the high humidity that prevails on tropical islands, revealed that, insofar as packaging is concerned, U. S. Army Ordnance has licked the jungle.

Thousands of tons of ordnance equipment, much of it in high strength paper packaging, are now moving into the Southwest Pacific theater. This material is being stored safely in ordnance depots until called for by General MacArthur's fighters. The equipment and spare parts, due to the modern packaging methods used, are received by the front-line troops in factory-perfect condition, thus making it possible to save countless American lives and to inflict maximum punishment on the enemy.

Camas Gives Many Felts For War Refugees

● Crown Zellerbach Corp., Camas, Wash., contributed 67,295 pounds of discarded paper machine felts processed into blankets for distribution among British war refugees, during June. The British War Relief society, one of the agencies which receive the blankets, shipped 4,423 of them to Britain in July, the largest shipment of the year and 16.7 per cent more than that for the previous month. The society expressed appreciation to J. E. Hanny, resident manager at Camas.

Westinghouse Honor

● Girard B. Rosenblatt, Pacific Coast district manager of the industrial and marine divisions, Westinghouse Electric & Manufacturing Co., will be awarded the Westinghouse "Order of Merit," the company's highest award for distinguished service, some time in June by B. W. Clark, the company's vice president in charge of sales.

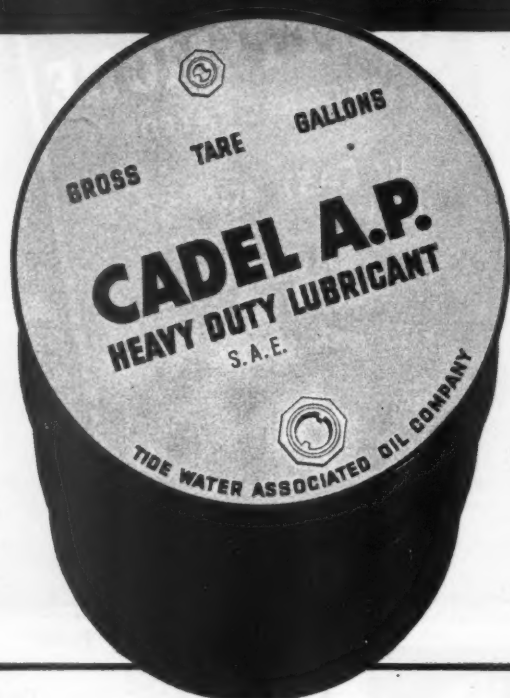
A native of New York, N. Y., Mr. Rosenblatt graduated from Columbia University in 1902. He joined Westinghouse the same year as an apprentice.

He was transferred to San Francisco in 1920 and his activities were expanded to include supervision of Westinghouse engineering activities in the paper, pulp, lumber and petroleum industries. Later, Mr. Rosenblatt was appointed manager of the industrial and marine divisions.

Steinman Is WPB Executive

● James Hale Steinman, Lancaster (Pa.) newspaper publisher, has succeeded Arthur Treanor, Saginaw, Mich., as director of the U. S. War Production Board's Printing and Publishing Division.

**ONE GREAT OIL for
ALL Heavy Duty Engines**



**Use CADEL A. P.
for these advantages:**

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| 1. Clean engines | 8. Clean intake air ports
(2 cycle diesel engines) |
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| 3. Free piston rings | 9. Easier starting at low temperatures |
| 4. Free valve stems | |
| 5. Cleaner filter elements | 10. Economical oil consumption |
| 6. Clean oil passages | 11. One oil for all engines. |
| 7. Long bearing life | |



**TIDE WATER
ASSOCIATED
OIL COMPANY**



THE BEMIS BROS. BAG COMPANY of Pepperell, Mass., which converts pulpwood into multi-wall paper bags for protecting Army equipment, receives the Army-Navy "E" for its production record. Left to right: Brig. Gen. Alden H. Waitt; F. G. Bemis, president; Lige Coakley, assistant superintendent; Captain G. L. Mendeal, U. S. Navy; A. N. Weeks, manager; G. A. Schultz, superintendent; Judson Bemis, director, and Eileen Marshall, forelady.

INVITATION TO COMMIT SUICIDE

THIS invitation has been delivered in every language, to every country in the world. It is not always signed by A. Hitler. If it were, you would reject it instantly, of course.

But it comes in whispers across a luncheon table. In conversation among your friends. You hear it, you read it, and God help you, you repeat it. And still have no conception of the harm you've done your country, and yourself.

"The workers are loafing," "Capital is profiteering." "The refugees are taking the best jobs." "The farmers are trying to rob you."

The more energy we waste hating each other, the less strength we'll have to deal the killing blow to our real enemy.

You recognize how this happens in far away countries. You condemn it. You resent it on behalf of the nations and the innocent people it has destroyed.

The point is, are you keen enough to recognize it here in America . . . in your own home town? Are you smart enough to reject this invitation? Are you patriotic enough to see then that your family, your neighbors, the people you work with, reject it too?

If you do this . . . and not unless you do . . . then you have helped America rise to its full stature as a nation fighting for the rights of all humanity. You have helped to win this war, as though you fought in uniform with bayonet in your hand—The Blow Pit, published by Port Angeles, Wash., employees of Fibreboard Products Inc.

Scope of Management-Labor Committee Outlined

With a view to maintaining a closer bond between the management and the union's organization, Powell River Company recently initiated a joint committee plan which has so far met with gratifying results.

The committee established at the British Columbia pulp and paper community is composed of twelve members, of whom six are from the management and six from the local unions.

Meetings are held every three weeks and either the management or the local unions may submit the subject for discussion, depending on the problems considered to be the most urgent at the time.

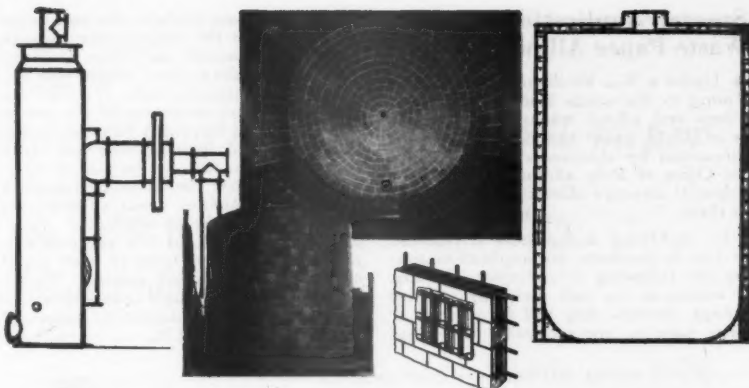
It is mutually agreed that this committee will not discuss working conditions, grievances or wage rates.

One of the principal functions of the committee will be the consideration of suggestions received from employees.

The suggestions scheme was developed whereby any employee could outline his suggestions and sign his name at the bottom of a sheet, provisions being made so that the bottom flap could be folded over and sealed.

After the suggestion has been discussed, it is decided whether to accept or reject it or hold it for further consideration. If accepted or rejected, the panel at the bottom is then opened to find out the name of the suggester and, depending on the value of the suggestion, an award is given to the author.

Problems relating to efficient use of manpower and returning injured employees to work in easier jobs are in the committee's field.



GOOD LININGS ARE ESSENTIAL FOR Successful Mill Operation

Trouble-free, long-time operation of digesters, chlorinators, gas cooling towers, storage tanks, etc. depends largely on the selection of the correct lining.

For sixty years, Stebbins have exclusively devoted their business to solving lining and tile tank problems. Our designers are thoroughly familiar with the chemical and mechanical requirements of various pulp and paper processes. Our

erectors know their way about the mills, thus permitting your own men to carry on their own jobs without interruption.

The research program carried on in our own laboratories assures the correct materials to fit the operating condition.

Every installation is covered by a lump sum contract.

When a lining or tile tank job is required, consult Stebbins.



Stebbins Engineering Corporation

TEXTILE TOWER

SEATTLE, WASHINGTON

New Johnson Air Separator

• A self-draining compressed air separator, which eliminates the need for external traps or the uncertainties of manual draining, has been developed by the Johnson Corporation, of Three Rivers, Mich. Known as the Johnson Type SA Separator, it has a complete trap mechanism built right in, which releases from the separator, automatically, all the water, oil and other moisture that has been removed from the compressed air.

The operation of the Type SA in removing water, dirt and oil from compressed air is identical with that of the standard Johnson separators. It employs the two principles of (1) expansion and (2) change of direction, a combination which, according to the manufacturer, achieves an efficiency of more than 99%. The entering air is first allowed to expand slightly, thereby precipitating most of the entrained moisture. Then it passes through the "thousand baffles"—a labyrinth of coarse wire mesh—changing direction of flow abruptly many times, and surrendering the remaining particles of foreign matter.

Pulp Mills Supply

• The cores from peeler logs come out of the Alberni Plywoods, Ltd., mill at Port Alberni, B. C., are run through a one-man sawmill consisting of a small carriage and headrig which converts the cores into railroad ties. Slabs are transported by truck to the nearby chipping plant of Bloedel, Stewart & Welch, Ltd., and from there they are shipped to Crown Zellerbach Corp. pulp mills in the state of Washington.

Many Paperboard Uses Restricted In Canada

• Canada's Wartime Prices and Trade Board announces restriction ranging from 5 to 40 per cent in the quantity of paperboard which may be used in making certain articles, packages and connected paper products, and the elimination of more than 40 other items.

Use of paperboard is prohibited for the production or packaging of such items as paper napkins, towels and doilies, decorative wrapping and crepe paper, individual servings of cereal products and individual paperboard containers for all kinds of clothing except footwear.

Paperboard for making or packaging games and toys (other than playing cards), lamp shades and reflectors and novelties such as horns, Christmas crackers, hats, and table decorations and fireworks has been cut to 60 per cent of 1943 purchases.

The quota for containers supplied retailers for packaging goods at retail—other than those designed to package perishable goods—has been fixed at 65 per cent of 1943 purchases. Containers for cleaners, soaps, millinery and office supplies are under a 75 per cent quota.

Unrestricted production is permitted for containers for butter, cheese milk, eggs, honey, maple and corn syrup, meat, fish, fowl, soup, fruits and vegetables and their juices, bottle caps and closures and paper cups.

Orders for the defense, munitions and pensions and national health department are to be given first delivery. Users who acquire less than a total of 500 pounds or \$250 worth of paperboard articles in any year are exempted from quota restrictions.

OFFER A QUICK, EFFECTIVE AND LOW COST SOLUTION

Objectionable dirt, abrasive materials, etc., are all rounded up and caught at low cost with Vortraps.

More than 2000 Vortraps are now policing the quality of pulp and paper furnish in this country and abroad.

Write for Bulletin No. 209 and learn how Vortraps can help you now.

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New York 5 N. Y. Montreal, P. Q.

Special Applications For Waste Paper Allowed

● Under a War Production Board order aiming to discourage black market operations and afford means of emergency relief, U. S. paper and paperboard mills threatened by shutdowns may apply to the Office of Pulp allocation, WPB, for a special directive allocating waste paper to them.

In qualifying, a consumer is required to file in duplicate his application stating the following information: (1) List of orders in the mill including priority ratings thereon, that will be delayed if waste paper is not received; (2) What

efforts have been made by the mill to get waste paper at the ceiling price through established channels and other available sources, including those which may involve extra shipping cost; (3) The applicant's present inventory of the grades of waste paper for which he is requesting relief, expressed both in tons and days' consumption at the current rate of operation; (4) That the quantity requested represents minimum needs to meet his authorized production schedules.

The new Order M-377 effecting this practice covers three types of waste paper only: "No. 1 mixed paper," "No. 1 news," "old corrugated containers" in accordance with the definitions contained in OPA Order MPR-30.

Hinde & Dauch Pioneers Pre-Packaging

● Pre-packaging of goods by manufacturers in ready-for-sale units is expected to eliminate considerable expense for department stores and other retail organizations after the war.

Wartime shortages of paperboard has pretty much halted the development of the new wrapping process. However, many establishments which have suffered losses in damage caused by handling and repacking of goods as well as loss in time and labor, are sold on the idea.

Outstanding pioneer in developing and selling the pre-packing idea to manufacturers and retailers is the Hinde & Dauch Paper Co. (Sandusky, Ohio) which specializes in "engineered" corrugated board packages for everything from chinaware to sofas. Although it is currently up to its ears in prepackaging all sorts of items for the government—shells, firearms, food and clothing—it is nevertheless advertising its Prepak method in trade papers and has just brought out a new booklet, "How to Prepak in Corrugated Boxes (via Howard Swink, Marion, Ohio)."

The 59-year-old firm started to specialize in pre-packaging back in 1929, was spurred on when Allen C. Albee, known as the "dean of pre-packaging," joined the company. Hinde & Dauch then proceeded to set up a package-designing, package-engineering laboratory—the first of its kind.

Special Tests

● Staffed by package designers, artists and paper board specialists, the laboratory examines a manufacturer's product from all angles, photographing it, measuring it, timing its packing and unpacking. The laboratory experts also get all the details on how the product is shipped, stored, displayed and used by consumers. Then a custom-built, functional package is designed. Next step is to put the product in its new wrappings into a "torture chamber" where it is trampled on, thrown, kicked and subjected to every other punishment it might receive in actual shipping. It is also put through a "pincers" to test its load carrying capacity.

R. H. Macy & Co., just before the war, had some 45,000 items prepacked by its suppliers in ready-for-delivery units. The store has had to abandon prepacking to some extent, but it plans to return full tilt after the war. Other fans of the process are Marshall Field, Sears, Roebuck, Montgomery Ward, Bloomingdale's, Gimbel's.

DuPont Official Heads Compressed Gas Man'fers

● Thomas Coyle, chlorine products manager of the electrochemicals department of E. I. du Pont de Nemours & Company, was elected president of the Compressed Gas Manufacturers Association, Inc., January 24, at New York.

Mr. Coyle joined the Du Pont Company in 1930 when the company acquired Roeseler and Hasslacher Chemical Company with which he had been associated 26 years.



How will you have it—HARD OR SOFT?

Tongues were in many cheeks when first attempts were made to develop compounds of available Synthetic Rubber that would be soft enough to use on printing rolls—even sponge rubber—or hard enough for specialized services.

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V-Mail Paper

More than fifty million V-mail letters, weighing five and a half tons have been dispatched to the United States from England since the Army Postal Service was started in June, 1942, according to a recent report.

Heads Vancouver Box Co.

• Kenneth F. R. Mair has been elected president of the Vancouver Paper Box Co. and Davies Paper Box, Ltd., both operating in Vancouver, B. C. Some time ago Mr. Mair acquired the interest of E. D. Judson in these organizations.

Buys Mill in Oregon

Oregon Pulp & Paper Co., Salem, Ore., purchased the Hebo Alder Mill, about twenty miles south of Tillamook, Ore. The mill, formerly owned by the Ramacher interests, will be managed by Rudolph Ramacher.

U. S. Lens Tissue Better, Cheaper Than Jap Product

• A revised federal specification for lens tissue used for cleaning lenses and other parts of optical instruments, covers a new type of tissue developed by a United States manufacturer in cooperation with the Navy Department and the National Bureau of Standards.

This tissue supplants the Japanese tissue made from fibers peculiar to the Orient, on which the original specification was based, and which, of course, is no longer available. The requirements for this paper are severe. It must be very soft, free from abrasive particles, lint, and dusting, and very absorptive. The American tissue, which is made from wood pulp, is fully equal to the Japanese tissue in these respects and in addition has a high degree of wet strength imparted by treatment with a synthetic resin, and superior dry stretch imparted by creping. It was found by the National Bureau of Standards that when this tissue was fully saturated with water, it retained on the average, 36 per cent of the dry tensile strength in the machine direction and 39 per cent in the cross direction of the paper. The stretch of the dry paper in the creped direction averaged some over 20 per cent.

Extensive service trials by the Navy Department also proved the suitability of the paper for the intended uses.

This paper is effecting considerable economy in two ways. It costs \$300 per ton as compared with \$1700 for the Japanese tissue and much less of it is required for a given cleaning operation.

Tip to WPB: Here's Possible Source of Trucks

Drivers of Kelley Logging Co.'s trucks up at Cumshewa Inlet on Queen Charlotte Islands, British Columbia, are wondering whether the equipment they are using isn't about the oldest in use for saw and pulp logs.

The Kelley company, which gets out pulp logs for Powell River Co. as well as logs for aircraft manufacture, was badly in need of trucks, but, like a lot of other loggers, it couldn't get priorities. The purchasing department eventually located a fleet of brightly painted U. S. army trucks that had never been used. The catch was that they were built in 1912! They had all the trimmings of the pre-World War I period—chain drive, solid rubber tires, coal oil lamps. The trucks were purchased and new engines installed.

At last reports they were giving good service.

POSITION WANTED as superintendent bleached kraft or soda pulp mill. Graduate chemical engineer, 20 years' experience development and supervisory capacity. Thoroughly experienced in mechanical maintenance and operation latest equipment. Technical paper mill experience. Reply Box 11, Pacific Pulp & Paper Industry, 71 Columbia St., Seattle 4, Wash.

WANTED: Mechanical Engineer by Pacific Northwest Timber processor for designing and improving production line. Applicant state experience, not restricted to timber, and qualifications in first letter. Reply Box 10, Pacific Pulp & Paper Industry, 71 Columbia Street, Seattle 4, Wash.

Let's Look at the Records

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About Two Letters

Of many letters we have received from men and women of our organization who are in the armed forces, two are especially significant.

"Sometimes I wish every fellow I knew could spend just one day and terrifying night out here with us," wrote one soldier. "There would be more aching bellies and not so much bellyaching. Suppose we should say, 'I think I'll lay off: it's raining too hard, or I'm tired.' Every minute counts and I hope that they can realize that."

The second soldier's letter said: "From what I have seen of the war down here I think the Army, Navy and Marine Corps are doing a darn good job. In our last move I was surprised to see 'Trona Soda Ash' in our stores, but soon found out why we carried it. As you know fresh water is very precious—well, it is down here also. When an outfit lands that is one of the first things done—to get a fresh supply, and so we set up the distilling units in which the soda ash is used."

We are proud of the men and women who for a time have relinquished their places in our organization to serve their country.

We also are proud of the part Trona Soda Ash, Trona Salt Cake and all of our other products have in making the implements of victory. Our best estimate is that at least 85 per cent of all we produce is devoted to war work.

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—Carlyle

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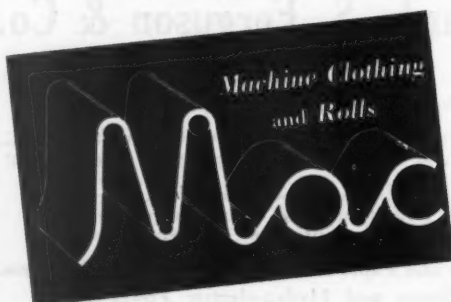
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